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ABSTRACT

This hearing before the House Subcommittee on Early Childhood, Youth and Families of the Committee on Education and the Workforce on Educational Technology and the Elementary Secondary Education Act contains statements by: Michael Castle, Subcommittee Chairman; Dale Kildee, Subcommittee member; Thomas Carper, Governor of Delaware, accompanied by Iris Metts, Secretary of Education, Dover, Delaware; Orlando George, Jr., President, Delaware Technical and Community College, Dover, Delaware; Wayne Hartschuh, Executive Director, Delaware Center on Educational Technology, Dover, Delaware; Tom Sloan, State Librarian, Delaware Division of Libraries, Dover, Delaware; Nicholas Fischer, Superintendent of Schools, Christina School District, Newark, Delaware; Robert Smith, Superintendent of Schools, Milford School District, Milford, Delaware; Sallie Reissman, teacher, Lombardy Elementary School, Wilmington, Delaware; Charles Ammann, Technology Projects Specialist, Capital School District, Dover, Delaware; Rodney Rivera, student, University of Delaware, Bear, Delaware; Mark Schonbach, student, the Charter School of Wilmington, Delaware; and Wesner Stack, Supervisor of Educational Technology, Milford School District, Delaware. (MES)

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FIELD HEARING ON EDUCATION TECHNOLOGY AND THE ELEMENTARY AND SECONDARY EDUCATION ACT

ED 442 462

HEARING

BEFORE THE

SUBCOMMITTEE ON EARLY CHILDHOOD,
YOUTH AND FAMILIES

OF THE

COMMITTEE ON EDUCATION AND
THE WORKFORCE
HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTH CONGRESS

FIRST SESSION

HEARING HELD IN NEWARK, DE, April 12, 1999

Serial No. 106–19

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EDUCATION TECHNOLOGY AND THE ELEMENTARY AND SECONDARY EDUCATION ACT

MONDAY, APRIL 12, 1999

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON EARLY CHILDHOOD,
YOUTH AND FAMILIES,
COMMITTEE ON EDUCATION AND THE WORKFORCE,

WASHINGTON, D.C.

The Subcommittee met, pursuant to call, at 10:00 a.m., Glasgow High School, 1901 S. College Avenue, Newark, Delaware, Hon. Michael N. Castle [Chairman of the Subcommittee] presiding.

Present: Representatives Castle and Kildee.

Staff Present: Mary Clagett, Professional Staff Member, and Alex Nock, Minority Staff Associate/Education.

OPENING STATEMENT OF CHAIRMAN MICHAEL CASTLE, SUBCOMMITTEE ON EARLY CHILDHOOD, YOUTH AND FAMILIES, COMMITTEE ON EDUCATION AND THE WORKFORCE, U.S. HOUSE OF REPRESENTATIVES, WASHINGTON, DC

Chairman Castle. Let me welcome everybody here and everybody who is on television hooked in at Newark and Christina High School to the Subcommittee on Early Childhood, Youth and Families field hearings. This, by the way, is an official hearing of this Subcommittee. It is called a field hearing, and we are doing it here. The format, at least initially, is that I will speak first and then Mr. Kildee who, by the way, is a distinguished Congressman from the State of Michigan, who has come all the way to be here today.

We are on our way back to Washington. We are voting later this afternoon. We are going to talk about time limits in a minute here or two because of that. But Mr. Kildee has probably been as involved in education as anybody in the Congress in the United States over the last few decades, and does, I think, an exceptional job. He cares greatly about the kids, the educational system, and I am honored to have him here today and to join us at this session.

He told me this once, but I think he has the longest consecutive voting record without missing a vote in Congress. We don't want him to be late. I can be a little bit late in getting back to the Hill because mine is not quite as long as his.

I would like to take this opportunity to welcome all of you to this morning's hearing. I do look forward to discussing an issue that is very important to all of us, which of course is the education of our children. We are specifically going to examine how technology can be used to expand educational opportunities and improve student achievement for all.

I would like to express my appreciation obviously to Mr. Kildee, which I have already done, because his service has really been tremendous in the interest of children. I would also like to thank the administration, teachers, and the students of Glasgow High School and the Christina School District for hosting this morning's hearing.

And next, obviously, I want to welcome our Governor, Tom Carper, and our distinguished witnesses who are here to provide us with testimony about how Delaware is incorporating technology into its educational reform efforts and into the classroom as we see here. It has been through Governor Carper's leadership that Delaware has become one of the first states in the Nation to wire all of its schools to the Internet and to put technology at the heart of the State's reform efforts.

We are the first State in the Union, so we are always talking about first state things here. You need to know that. I look forward to receiving your testimony, all of you, and learning more about innovative programs and strategies that will lead our schools into the next millennium.

This morning's hearing is one in a series of hearings that our Committee will hold in preparation for reauthorization of the Elementary and Secondary Education Act, better know as ESEA, and well-known to educators. We hope to come away from this morning's hearing with an understanding of how Delaware is using technology to improve education.

We also hope to take some recommendations back to Washington D.C. on how the Federal Government can better assist state and local communities that use technology in improving America's schools.

In recent years, funding for education technology programs has dramatically increased at the Federal level. In fact, Federal funding for education technology programs authorized under title III of ESEA alone has increased from $52.6 million dollars in fiscal year 1995 to $698 million in fiscal year 1999. However, as part of the growing support so many programs have sprung up that we are faced with a situation where there is little to no coordination among the programs at the Federal level.

This forces schools and administrators to waste hours of time and money, in some cases, to hire consultants to fill out applications for Federal education technology funds. The U.S. General Accounting Office, you might know it as GAO, has reported that there are over 27 Federal programs administered by five different Federal agencies, which provide funding for education technology to K through 12 schools and to libraries.

Federal assistance ranges from grants to states and local school districts for education technology authorized under ESEA, to tax incentives for corporate donations of computer technology for elementary and secondary education, to establishment of the E rate. The primary education technology programs that are under the jurisdiction of our Committee, however, are those authorized in Title III of ESEA, including one, the national challenge grants for technology and education, which are awarded on a competitive basis to consortia of school districts and other partners for activities such as integrating technology directly into curriculum and providing professional development for teachers.

Two, the technology literacy challenge fund, the major State grant program intended to connect all K through 12 programs in the United States to the Internet, provide teachers with training and support, provide teachers and students access to technology, and ensure that effective software and on-line resources will be available for use with the curriculum.

And three, Star Schools, a program that promotes distance learning projects linking teachers and students over large distances using telecommunications technologies such as satellites and fiber-optic networks. We must look beyond just the programs authorized under the technology title of ESEA in order to continue a successful integration of technology in the classroom.

We must find a way to consolidate or at the very least to allow states and local school districts to integrate the different funding streams that are available for technology in ways that allow for a truly coordinated and cohesive education technology effort. Support for education technology must lead to increased academic performance, not just the presence of new computers in the classroom or access to the Internet.

Recent studies have found that education technology has a positive impact on student achievement, but only when used by well-trained teachers. In fact, studies on the use of technology in the classroom stress the need for improved teacher training, the integration of technology into the education process, including curriculum development that effectively integrates technology, adequate access to technology, and careful planning.

While we are still in the process of determining what exactly we will do in the area of education technology as part of our consideration in the ESEA legislation in this Congress, you can expect technology will be a major focus of any reform. The question is, what is the best way to support successful technology efforts at the State and local level?

It is essential that any reforms in Federal education legislation get funding into the hands of local educators in the most efficient manner so that they can determine the priorities and needs of their students. I invite you to work with us in development of the legislation to reauthorize ESEA and, particularly, on that portion of the legislation dealing with education technology.

I look forward to your testimony. I know that it will be most helpful to all of us in our efforts, and now I will turn to Mr. Kildee for his opening statement.

WRITTEN OPENING STATEMENT OF CHAIRMAN MICHAEL CASTLE, SUBCOMMITTEE ON EARLY CHILDHOOD, YOUTH AND FAMILIES, COMMITTEE ON EDUCATION AND THE WORKFORCE, U.S. HOUSE OF REPRESENTATIVES, WASHINGTON, DC – SEE APPENDIX A

OPENING STATEMENT OF RANKING MEMBER DALE KILDEE, SUBCOMMITTEE ON EARLY CHILDHOOD, YOUTH AND FAMILIES, COMMITTEE ON EDUCATION AND THE WORKFORCE, U.S. HOUSE OF REPRESENTATIVES, WASHINGTON, DC

Mr. Kildee. Thank you, Mr. Chairman. In real life I was a schoolteacher. So it is good to be back in a high school this morning. I am really pleased to join Chairman Castle in Delaware today at this hearing on education technology and its focus on our elementary and secondary programs.

As I am sure all of you know, Governor Castle took over the chairmanship of this Subcommittee several months ago, but he has quickly established himself as the true leader in search of bipartisan education reform. If we had more Mike Castles in the Congress, we could get a lot more. I also know we appreciate him on our side of the aisle. I know he is appreciated on the other side of the aisle.

It has been a pleasure to work with Chairman Castle. I look forward to our continuing work in this Congress. I also want to welcome my former colleague in the Congress of the United States and now governor of this great state, Governor Carper. You have been a very valuable friend of education, both in the Congress and as a governor of this great State.

Technology in our classroom and increasing access to all children, especially disadvantaged children, is an essential component in raising the educational achievement of our nation's students. A perfect example of technology's impact upon student achievement is evidenced by the recently issued long-term study of the West Virginia Basic Skills Computer Education program.

That study showed that technology was an important factor in helping students make significant gains in basic educational skills and to achieve high standards. And, importantly, the study found that West Virginia's technology program made its biggest impact on low-income and rural children who do not have computers at home. These disadvantaged students showed the largest gains in student achievement, and this study found that the education technology resources provided in schools was a major factor in accomplishing this feat.

Coupled with the needs to place technology in our classrooms is ensuring that teachers have the knowledge and skills to integrate technology into every day instruction and teaching.

When I was teaching, and when I was at the University of Michigan learning how to teach, which is a great school, I believe the level of technological sophistication we encountered was learning how to thread the projector and to change the ink in the mimeograph. Of course, that was a long time ago. However, I really think that our teacher training institutions have to be an integral part, an essential part, of making sure that technology in the schools works.

As Chairman Castle and I look at the reauthorization of the Elementary and Secondary Education Act, including title III programs and others that have a technology focus, I am interested in finding ways to better target technology to disadvantaged children and to coordinate existing ESEA programs to make them even more effective. Since we have such a distinguished panel of experts at today's hearing, I am interested in learning from your experiences and applying this knowledge to the work that our Subcommittee will do in Congress.

Again I thank you Mr. Chairman for holding this hearing. I look forward to the testimony of all of our witnesses.

Chairman Castle. Thank you very much, Dale. We appreciate again your being here. We know it is difficult to move from state to state when you represent one part of a state, and your being here shows your belief and interest in education.

At this time I would like to introduce a good friend and a strong leader in the area of education, Governor Tom Carper, the Governor of Delaware.

As I mentioned in my opening remarks, it has been through Governor Carper's leadership that Delaware has become one of the first states in the Nation to wire not only all of its schools but all its classrooms to the Internet.

Governor Carper has put technology at the heart of Delaware's education reform efforts, and in his role as Chairman of the National Governors' Association this year, he has chosen education, including the goal of harnessing technology and education, as a primary focus for the Nation's Governors.

The governor is accompanied this morning by Dr. Iris Metts, who is the Secretary of Education for the State of Delaware. We would like to welcome both of them. Now for just a couple of ground rules.

First of all, when you have a Governor here, there are no ground rules. He does whatever he wants. So don't go by what he does. But generally speaking, for the next two panels, we try to ask our witnesses to take no more than 5 minutes. So some of you may want to edit your comments. That may be an exception with Dr. Orlando George. Lonnie, I think, may take a little bit longer. He has a special presentation to make.

If you have any other particular concerns, I know Lonnie has to leave a little bit early, it would be helpful for us to know that as well. And I believe, Governor, that you are going to testify and Secretary Metts is not, but will be here to answer questions. We want to hear from her, however, before it is all said and done. However you want to run it is fine by us. We turn it over to you.

STATEMENT OF THE HONORABLE THOMAS CARPER, GOVERNOR, STATE OF DELAWARE; ACCOMPANIED BY IRIS METTS, SECRETARY OF EDUCATION, STATE OF DELAWARE, DOVER DELAWARE

Governor Carper. Thank you so much for giving Dr. Metts, myself, and others here the opportunity to provide some input to your Subcommittee's deliberations as you approach the reauthorization of the ESEA.

I just want to say to you, thank you for your leadership, not only of our State, but for the great job you are doing in Congress. We are proud of you and especially appreciative of your work on the educational front. To Dale Kildee, how long has it been since you missed a vote?

Mr. Kildee. The last vote I missed was in March of 1985. I was in the hospital then.

Governor Carper. I joined Congressman Kildee and the Congress in 1983, and that was a long time ago. He has gone longer without missing a vote than I served in the Congress. It was great to be with you then, and it is wonderful of you to be here today. We thank you for your presence and for your true stewardship over the years. Dr. Metts is here to answer the tough questions. This is a home game for her. She was the predecessor to Nick Fischer, who is out in the background, who is the Superintendent of this school district, Christina.

I am going to slip off in a little bit to go over to a school that is being accredited here today as a school for our juvenile delinquents, and it was a school that used to be a badge of shame for the State. It is now a badge of pride, and I want to be there in a little bit to accept that accreditation and to celebrate with them.

Let me say over the next several minutes, that first of all, we won a big lawsuit a couple of years ago. It was a lawsuit that was launched during Mike Castle's term as Governor, and it was one that we won early during my tenure, and one that the Congress and our Congressional delegation, Mike, Bill Rock, and Joe Biden fought very hard to preserve.

We won about $200 million in that lawsuit with New York State. We elected to take about $25, $30 million of it to use to wire all of our schools and to do the infrastructure work of 180 public schools. Legislation that I signed in 1993 in Delaware called for Bell Atlantic to take the Internet to, literally, the front door of a school and we used as part of our settlement with New York State, funds to go ahead and wire every single public school classroom in the State. That is about 6,000 classrooms.

We completed that work this past fall, and now we have not only Internet access to every school but to every public school classroom in our State. And I think as we look around the Country, you find a lot of states that are beginning to do that, and are moving toward developing the infrastructure which they see in part as a state responsibility that in some cases is shared with the local school districts. We have done that.

The second piece with that, the infrastructure work that we undertook, was to try to make sure there was something to plug into the walls, and we need computers that work, and hopefully pretty good computers. Congress and the President provided companies that donated a computer within no more than 2 years old a tax credit. That is very helpful in encouraging companies to donate computers. We will probably provide this month anywhere from 100 to 200 computers to schools throughout our state that have been donated, in some cases by companies and other cases by public entities like the State of Delaware. We have a terrific program and we use Americorps to train the vocational-tech high school students to rehab and upgrade the computers, so that they might be introduced into our schools.

We are going to take that a step further and take the same kind of training program into our prisons; we will be announcing something along those lines later this Spring. But the tax credit is actually quite helpful in getting the businesses to be willing to donate computers that are usable.

We have also provided, I think, an appropriation of about $13 million, for our school districts to use over the next couple of years to go along with their other monies that they have and that they get from the State to buy computers. So from those different sources, we feel that the wiring is done, a lot of computers have been purchased and a lot more are either being donated, upgraded, or purchased with the State and local share.

The third piece in our approach to technology is to try to make sure the teachers know how to use the technology. It is all well and good that the wiring is done, it is great we have the computer to plug into the wall, but if you don't have a teacher that is comfortable with using the technology, who knows how to use that technology in the classroom to make the learning come alive, and to be relevant to the students in the classroom, it is a waste of time and money.

A whole lot of folks in our State are working to try to make sure that the teachers are comfortable with using the technology. We have some school districts that have literally given every teacher their own computer. We have school districts that have trained every teacher on how to use their own computer on their desk in the classroom.

Del Tech, who is represented here today by President Lonnie George, will be speaking to this later. I am sure they provide terrific training to our teachers in all three counties, I believe now, to hundreds of teachers to enable them to become comfortable with the technology and the computers, and able to use them effectively in the classroom.

We are providing as a State about $300 to $350 this year in training for teachers that can be used, among other things, for education technology, and we are partnering with the folks like Delaware Technical and Community College as well as the school districts.

We talked about wiring the schools. We talked about having something to plug into the wires -- the computers. The third piece is training the teachers to use the stuff effectively.

The fourth piece is for us to try to make sure that the systems work. It is great that you have the wiring guns, it is terrific you have the computer that is there, and it is wonderful to have a teacher that knows how to use it. But if the stuff breaks, you need to have somebody to fix it and keep it working. Again, we are not using our money very effectively.

Some of our school districts have taken different approaches. I think one of the more innovative approaches is one that they are using down in the Milford School District, which is in the Southern part of our State. It is one of our smaller school districts, but they have gone out and actually purchased better computers, Dell computers.

They are one of the school districts that literally put a computer on every teacher's desk. They have trained the teachers to use them. They also have a maintenance contract that is part of their deal with Dell. When the computers go down, they can get somebody there lickity-split to fix them and get them working again. Different school districts are using different approaches, but that approach seems to me to make a lot of sense.

The last point I want to mention is a little initiative that is being tried in, I guess, about 15 schools around our State. They are mostly elementary schools, and it is one that is headed by an outfit called Lightspan, which is a technology consortium which you may have heard of. What they have done is work with schools, particularly with kids in schools that are trailing some of their own classmates who need a little bit of extra help, and they have gone into the homes of these kids and they have transformed, with technology, the the televisions within those homes to computers.

They have trained the parents of those children how to use the technology to be able to extend the school day for that kid, to reduce the amount of time the kid is watching junk on TV, be involved in the education of their child, and also to -- you find out when the kids go to bed at night oftentimes the parents will turn the TV back on not to watch Leno or Letterman -- literally use the education technology to improve their own skills.

That is an exciting concept, and one that has actually demonstrated very, very encouraging results in some of the elementary schools where it has been introduced.

The last thing I would mention is -- we in the National Governors' Association like to think of ourselves as 50 laboratories of democracy, and we are all out there experimenting, trying to figure out what works -- we actually set up within the NGA something called the Center for Best Practices, and the idea is to figure out what is working, and to share that information with everybody.

There are a whole lot of people to share it with, and therefore, one of the things I would ask you to consider as you go forward with the ESEA reauthorization is how to use the Federal Government better as a clearinghouse for good ideas, not just simply passing laws and putting regulations in place, but also acting effectively as the clearinghouse to help us to know what is working well and to disseminate that information throughout the country to encourage others to replicate what is working and to not replicate what is not working.

Those are just a couple of thoughts for me, a former Congressman, who has a lot of respect for both of you and the work that you are doing, and just a real deep appreciation for the chance to be here this morning to join Iris Metts in the beginning of this hearing. Thank you so much.

Chairman Castle. We appreciate your expression of respect for Congress. Not everybody has the same respect.

Iris, do you want to add anything before we take the questions?

Governor Carper. Or take away.

Chairman Castle. What is your schedule? It is 10:28, and I know you have a fairly tight schedule?

Governor Carper. We are supposed to be at Ferris at 10:45. So I am going to leave in about 5 minutes, if that is okay.

Chairman Castle. 5 minutes. Why don't we ask the governor questions, Iris, then we will hear from you when he leaves, if you don't mind?

Secretary Metts. Sure.

Chairman Castle. Actually, I couldn't agree with you more. With the last statement you threw me off because I was thinking about computers. You said something that I feel very strongly about, and that is, how to use the Federal Government better to develop good ideas and to put them together to replicate them to send them back out to the States and to eliminate those things which are not working. We never eliminate anything in Congress. And I will just leave that at that, but that drives me crazy.

Let me ask this question of you. I worry about -- and you touched on this and I think you handled it well -- the training of teachers. I worry that most of these kids, we are going to hear from a couple of them today, are far more advanced than a lot of the teachers that are teaching them in terms of the use of computers. I am not particularly computer knowledgeable and I am worried a lot of teachers are not.

Are we resisting this to some degree? So it is fine if we wire all the classrooms and provide everybody with the computers, but are we really able to take advantage of that? In other words, are we just doing something that it is there, but it isn't really truly helping in terms of improving the education of our young people? I would be interested in hearing any comment you have along these lines of making sure that these computers are advancing education.

Governor Carper. I have always seen the primary role of the Federal Government in education is to level the playing field. Just imagine a football game, and one side of the field is higher than the other, and you know, normally in a football game you change sides of the field at the end of a quarter. For some kids, they are playing in a field that is always uphill, they never change sides at the end of a quarter, they are always going up a hill and playing against the wind.

The role of the Federal Government, as I see it, is to level the playing field for those kids. And you do it in a lot of different ways. You do it with programs where healthy kids are born, and when these kids walk into school in kindergarten, they are not already hopelessly behind. You need to make sure there are feeding programs, to make sure we have Head Start funding, and that we have Title I programs here to help kids, particularly with reading, etc.

With respect to technology, one of the great roles that the Federal Government can play is to help in providing, particularly in the schools and the school districts where there is a fairly high incidence of poverty, where the State is not providing the funds, or where the local school districts simply don't have the funds to provide, in some cases, the infrastructure, the technology, and the training for the teachers, you have got a lot of – in our State, as our Congressman knows, the State provides about 70 percent of the funding for our schools. We are, I think, number six on a per capita basis on where we fund, and we over-fund for school districts on the operating side. We over-fund for school districts on the capital side. Lonnie George, who is now the President of Del Tech, was once a Representative and Speaker of the House and chaired the Joint Finance, which helped create the laws that provide for the equalization of funding in our schools. We think we do a pretty good job, a lot of states do not.

I think that technology can be a wonderful equalizer for kids. It can really help us level the playing field for the kids. To the extent that you have school districts where there is not a reasonable amount of money being made available from the State or from the local taxes to help on the technology, those kids are really getting shortchanged. So I would encourage you to keep that in mind as you go forward with the reauthorization with the focus on technology.

Chairman Castle. I will ask you one more brief question. I want to give Dale a chance to ask you whatever he wishes.

The last program you mentioned, the initiative which is mostly for the elementary schools where you go into the homes and attach TVs to the computers, does that help the low income problem of kids not having computers; is it primarily aimed at that?

Governor Carper. It is. And the technology is such that you can put a computer in a kid's home or you can have the technology actually to turn a TV set into a computer without much difficulty.

Chairman Castle. Good. Dale.

Mr. Kildee. Governor, my experience has been that many teacher training institutions are not doing an adequate job of training their teachers to really be knowledgeable about technology so they can rintegrate it into their curriculum when they teach, either in pre-service or in-service education.

What are your teacher training institutions doing here in Delaware to really emphasize teaching technology to the teachers so they can really know more than the students when they get into the classroom?

Governor Carper. Well, you put your finger on a big issue, and the issue is teacher quality. If kids don't have good teachers in the classroom, we can have all the technology in the world, and the kids aren't going to learn. We have to ask for and expect more of our colleges and universities that are turning out teachers. Either brand newly admitted teachers or teachers that have gone back to school to be reeducated and become accredited or certified as a teacher.

I am encouraged by the work that is going on in our colleges and universities in Delaware today with respect to education technology. For the most part, we are finding that the teachers that are coming out of those colleges and universities, whether it is University of Delaware or Delaware State University or Wilmington College, and others, that those teachers actually have the technology skills as they are going into the classrooms.

And while there are a lot of those new teachers that are being mentored by other teachers on classroom management and curriculum preparation and so forth, those new teachers are actually able to train the veteran teachers on how to use the technology. So I think we are beginning to do a much better job at the college and university level, getting new teachers prepared to go into the classroom.

One area that I am not going to admit we are doing a good enough job is with respect to the classroom management. How do you go into a classroom where you have disruptive students, kids who are behind, well behind, acting out in class. We are still not doing a good enough job there. But with respect to technology, I am encouraged by the kind of work that is going on in our colleges and universities.

Mr. Kildee. Do you have much in-service training for teachers who have been in the field, say 10, 15 years?

Governor Carper. Oh, yes, we do. We have invested a lot of money, and we have some good partners, including Delaware Technical Community College, whose president you will hear from in a little bit.

Mr. Kildee. Thank you.

Chairman Castle. Governor, thank you. I think people are getting edgy here. I don't know how you are going to get to Ferris School in 10 minutes unless you have a helicopter out there.

Governor Carper. We are going to crank it up. Thank you so much.

Chairman Castle. We want the kids to hear about this some day. We appreciate you being here, we know you have got a busy schedule, and all you are doing in education. Thanks for all you are doing in education.

Governor Carper. Thank you.

Chairman Castle. Thank you, Governor.

Mr. Kildee. I had the occasion to meet Secretary Metts in Washington a while ago and was very, very impressed with your up-to-date knowledge of education. We appreciated all of your wisdom there.

Chairman Castle. Secretary, would you like to say something to us before we ask you a question or two?

Secretary Metts. First of all, I would like to thank you for holding this hearing. Often we get legislation and vouchers from the Federal Government, and there isn't a lot of input, and perhaps this will give you a little bit of insight into some of the progress that we are making in Delaware and perhaps help structure the legislation somewhat.

I really do appreciate the fact that we have a Congressman who would take the time to come out and listen to what we are doing, and then to go back and structure legislation to fit what this State is doing, as well as to help those states who are not as far along as Delaware.

I also appreciate the fact that we have a Congressman who is not from Delaware who would come in and take the time to listen to what we are doing. So we are very appreciative of your time this morning.

And in having said that, I would like to answer questions or propose to you a vision of where actually technology is going in Delaware in the next few years, whatever you would like me to do.

Chairman Castle. Let me ask a question then because -- maybe you don't know the answer to this. But it was in my opening statement, and it is sort of a common theme you hear about this, and it is sort of common to the Federal Government. But I mentioned the number of Federal programs that exist out there and lack of coordination. As you know, I mean in a time where we are starting to balance the budget we put huge new monetary resources into technology, as I think we should, I don't have a problem with that, but in terms of running an education department, is this creating any problems or confusion, or is this not something you deal with on a daily basis?

Secretary Metts. Oh, yes. I want to say to Congressman Kildee that this is probably going to sound like a broken record to him because this is the same thing I said when I testified before. The two elements that you are pursuing in Congress right now are very important, flexibility and accountability. And I think what other reauthorization comes out of this, if we can maintain an understanding of the importance of flexibility and accountability, in looking at technology and the concerns that are there, I think we are going to be much better off to pursue individual goals.

Right now you just simply don't have the flexibility with the categorical funds that are there. You have to write a specific proposal that is aimed at a specific goal, and then I am not sure you are getting the accountability that you expect, because, if in fact the accountability is to look at student achievement, just as you said in the beginning Representative Castle, if you do not have a holistic plan that a state can propose to you for the use of that money, whether it is in technology or whether it is in Title I or wherever that money is being centered, if you do not have some evidence of student achievement, then you cannot be sure that you have maximized the effect of the Federal monies.

So the opportunity to be flexible, but to relate it to an accountability plan as proposed by the State of Delaware or some other state, is significantly important in getting to the final goal of student achievement. And I see Congress, at least under the leadership of the two people that are here, moving in that direction to recognize that it is being important.

Chairman Castle. Just as an aside, we just handled one bill on flexibility, which the Governor is very involved in, and you were too. And now there is discussion in the ESEA of a super Ed-Flex bill, although I think it will probably change names when it is all said and done. There is more discussion in Washington of not categorizing sums of money in particular programs, but to give more flexibility to the States.

George Miller in particular has made an argument for more accountability, which I happen to fundamentally agree with. And if we can bring it together, I think we can get both parties together on that issue. So it is an important issue.

It is a little bit aside from the technology thing, but it applies to almost everything we look at in the Federal Government.

Secretary Metts. I can really tie the accountability question very closely to technology. I think it is something that we haven't thought about quite as clearly, but we are thinking about it in Delaware. When you think of standards, content standards, there are hundreds, how do you make sure that all students are performing at a maximum rate and achieving those standards? How do you do that? If you give a teacher a stack of papers and say go mark down every time a child reaches a standard, you make a pencil or a pen recording of that, you are going to have a lot of paper and you are not going to have a good system.

But in Delaware, we are using something called an instructional management system, which is software geared to looking at Delaware standards, putting them in a technology system on a website, and connecting them on a website to test scores so that not only can we look at the mastery of various content standards, but we also can look at whether or not students are reaching those goals in achievement by comparing the test data to the actual standards.

And going a step further, it is our hope that we can share this with parents, that with the specific codes they can go into that website and see exactly what the students are doing and whether they are meeting standards and relate the assessment scores to the individual students.

Chairman Castle. Thank you, Secretary. I am going to turn to Mr. Kildee for questions. I have to step outside and straighten out the TV cameras for a minute.

Mr. Kildee. Thank you, Mr. Chairman. I will take over the chair while you are gone.

Chairman Castle. It is all yours.

Mr. Kildee. [Presiding.] You know, when I was a student and when I was teaching school, I taught for 10 years in Flint, Michigan -- I taught Latin back in those days -- every August or early September people would acquire school supplies. Back then the school supplies generally consisted of a pen, pencil, notebook, and ruler. The Supreme Court has since ruled that the school has to supply these items. But in those days, we supplied these items ourselves, and that is basically what the school supplies were. But school supplies are much more complicated than that now.

Do you have any idea what percentage of Delaware's students do not have a computer in their home?

Secretary Metts. Well, I would say it probably mirrors the national comparison, it may be about 20 percent accessibility in homes in Delaware of students who would have computers. The interesting statistic is that 1 in 5 students in this school, this is Christina School District, and I am sure the superintendent will relate that, has accessibility to a computer. So we are getting to a point where more and more students can use computers in schools, but it doesn't really solve the problem of having your own computer.

I see a future where a computer could really replace, particularly a laptop, could replace a textbook. If you look at what is going on in Bosnia right now and Yugoslavia, teachers are scrambling just to figure out what the political situation is and how to teach that information from Kosovo, because it changes every day. Can you imagine what a laptop in the hands of a student would do in terms of searching the Internet worldwide and getting up-to-date information? Whether that is at school or at home, it is essential to have that availability. In the future, I do see textbooks being replaced by laptops.

Mr. Kildee. The West Virginia study has indicated that the students who gain the most were the educationally disadvantaged students or poorer students who did not have a computer at home. What I am concerned about is that through the years, especially since, as we have in Title I, we have tried to close the gap of opportunity and educational gains for the poor, the disadvantaged, and the other students, that if we do not do something rather significant to make sure that students have in their home what other students have, our efforts will have been in vain.

Secretary Metts. There are two products on the market right now that would say that you could give a student whose family may not be able to afford a computer, a low-end computer that that student could take home, that could be used to access the Internet, and do some other things. You could code it so that if it is stolen it just shuts down after a certain period.

It has to be retooled. You can actually program that computer so that it is safe to take it home, which has always been the problem. If you take it home, do you lose it? The technology is growing so rapidly to ensure the safety of that computer when you take it home. It is just like checking out a library book in essence. I think the power of allowing a student to actually take that laptop home, irregardless of the socioeconomic conditions, is one of the most equalizing things that you can do to help a student move forward in school.

I certainly hope that Congress would investigate best practice and new technology, to look at the rate of theft in laptops and in exchange programs in models that have worked quite well, where there has been a very low cost in terms of damage from theft or from other entities, and that those models in the end help those students who did not have that computer available in the home to have that technology.

I think there are models out there that are working and should be investigated and districts should be given the flexibility to pursue those models.

Mr. Kildee. Just quickly, when I was in junior high school, I lived in a poor section of Flint, the east side of Flint. But even during the 1930's and early 1940's, my dad could always afford a newspaper. The teacher would ask us to cut clippings and bring clippings in to school. She assumed that everyone had access to a newspaper, but they didn't. For instance, my friend Bob's parents could not afford newspapers, so he would come over to my house to borrow our paper after I had cut all the good stuff out so he could take his clippings to school.

And that just maybe gives us some insight into the fact that some have advantages over others, and we should try to look at those advantages, and I think it can be helpful.

Secretary Metts. One of the interesting experiments was done down in Union City, New Jersey, in which the parents and the students used the computer to communicate with the school in Spanish. These were people who had just come from Cuba, as a matter of fact, who were put in a special newcomers arrangement of class. And for the first time, they could communicate by computer to the principal and not feel ashamed that they didn't understand the language. They would communicate in the Spanish language, and the principal would communicate it back to them. In that experiment, which was sponsored by Bell Atlantic, and I use that as a commercial not to promote Bell Atlantic, but to say that they did institute that model, those computers were not stolen.

I think the biggest fear of making this transition into the home to make sure that poor people do borrow or use extended property is the fear that the equipment is going to be stolen at some point. When you look at the relative cost of replacing computers and how fast technology becomes outmoded, you think that it might be cost effective if you do lose some units, because you are going to have to replace them very shortly anyway.

So I think we need to rethink what we share in terms of technology, particularly to struggling households, and I agree with you wholeheartedly.

Mr. Kildee. Thank you, Madam Secretary.

Chairman Castle. [Presiding.] Thank you. And thank you very much, Madam Secretary. We appreciate you being here.

Secretary Metts. If I may excuse myself, too, so the distinguished panel in back of me can be front and center.

Chairman Castle. Thank you very much. We appreciate all you do.

That concludes our first panel. We have three panels. The second panel I believe is going to move up here, the name tags will be put into place, and I think as they start to move into position I will read a little bit of their bios just to speed things along.

We are going to start with Dr. George, because he has to leave here shortly. The Governor has already introduced Lonnie in a sense, but he is the President of the Delaware Technical Community College and will testify about the importance of professional development in the use of education technology. Dr. George will describe his college's involvement in the Educational Technology Certificate program, which teaches teachers how to integrate technology into new and existing course curricula in lesson plans. That is all it says here, but he has obviously had a distinguished career in government before he got into this position.

Dr. Wayne Hartschuh will be the next witness. He is the Executive Director of the Center on Education Technology and will testify about how the Delaware Center on Educational Technology has led efforts to wire Delaware schools to the Internet. Dr. Hartschuh will also talk about what the future holds for education technology in Delaware.

I have Tom Sloan next. Tom Sloan, who is the State Librarian in the Delaware Division of Libraries will describe his involvement in the national project called ICONnect, working with teachers and young people on the use of technology and its incorporation into the curriculum.

And Dr. Nicholas Fischer, who is the superintendent of schools right here in the Christina School District, will testify how the school district has integrated technology into the classroom. Obviously, Dr. Fischer, we would like to take the opportunity to thank you very much for hosting today's hearing, and for all you have supplied. I know your administration, staff, and other people have put a lot of effort into this. We appreciate that and all the students of Glasgow.

Finally, our last witness in this panel will be Dr. Robert Smith, who is the Superintendent of Schools in the Milford School District, and I think that incorporates both a little bit of Kent and Sussex Counties, which is important. We have three counties here, Dale, so it is very important we have everybody represented. But he will testify about how the Milford School District has incorporated the use of technology into its schools. Milford has been the recipient of both technology grant and technology grant funding under Title III of the ESEA.

We appreciate all of you being here. We know Dr. George may take a little bit longer, but we hope you can keep your comments about 5 minutes. As you saw, we will ask a few questions and try to keep things moving.

We will start with you, Lonnie.

STATEMENT OF DR. ORLANDO GEORGE, JR., PRESIDENT, DELAWARE TECHNICAL AND COMMUNITY COLLEGE, DOVER, DELAWARE

Mr. George. Thank you, Mr. Chairman, and to our friend from Michigan, a warm welcome to Delaware. To Mike, congratulations to you, sir, not only for your appointment as the Chairman and for your efforts in this area, but also for that wonderful article that appeared about a week ago in the News Journal, a very richly deserved piece on your career in elective office in Delaware.

Chairman Castle. Don't ever say that, they will get me next time.

Mr. George. Mr. Chairman, the only thing that would cause me to leave the good graces of this Committee would be a group of students I had made a commitment to speak to, so we will see how it goes.

I am very appreciative of the opportunity to appear before you and offer my testimony on the reauthorization of the Elementary and Secondary Education Act. This morning my testimony will focus on the benefits of collaborative partnerships in educational technology and the role that the community college can play as a facilitator in the development of a technology-based learning community.

I might add, Mr. Chairman, this presentation, although much longer, was recognized at a national meeting of the Association of Community Colleges as a model program for the country. I have obviously taken it and tried to collapse it into about 7 minutes.

The business of education is about communicating information. All the hardware, software and infrastructure that we have come to call educational technology has the potential of really making a difference in student learning. But how do we make this potential a reality? And most importantly, how can we leverage our resources to deliver technology education in a cost-effective manner?

As you know, many different groups of individuals come through the doors of our community colleges. In fulfilling our mission as a community college, we are cognizant of meeting the needs of many diverse groups. At Delaware Tech, we looked for ways to develop a technology-based learning community to meet the needs of the seven stakeholder groups that you see on the slide.

We have recognized that a plan which would meet the needs of our students, the college students, the college faculty, may be applicable to a larger group of educators and, in turn, meet the needs of a broader community. We wanted to take a leadership role in facilitating a collaborative partnership for technology training.

What resulted from our efforts in Delaware was a statewide learning community in educational technology. Now there are several key components to the solution of this learning community.

The first key to the program's success was an advisory board comprised of representatives from the school districts who worked with college faculty to define the terminal competencies in educational technology that are needed by all teachers. Then the next key component was the Secretary of Education, Iris Metts, approved these educational technology courses for K through 12 teacher lane advancement, so that locked in the professional development component.

And then, in addition, legislative approval was received for state tuition reimbursement for teachers in the program. And the third successful part of this particular learning community was that our Ed Tech program was offered at all four campus locations within an easy drive of every Delaware teacher. Any campus can contract with a local school district to train groups of teachers, either at our campus or on the school site.

Not everyone recognizes the importance of hardware, software and infrastructure, which we call technology. And it is being more evident that any effort in educational technology requires competent technical support staff. The missing link here is training, teacher training for teachers. In fact -- I am sorry, technology training for teachers.

In fact, the Delaware Business Public Education Council issued a report last year called the Missing Link, citing the need for such training.

In response to all of those stakeholders that you saw earlier, Delaware Tech created the educational technology certificate program for faculty development. The program has two levels, a four-credit introductory certificate for those with limited knowledge of technology, and an 18 credit advanced certificate which progressively develops the ability to integrate technology into teaching and learning.

The program was developed from the 70 terminal competencies identified by the advisory committee, some of which are listed on the slide. The ones on the left come from the basic certificate, the ones on the right part of the slide come from the advanced certificate.

Since the program began last summer, we have enrolled over 400 participants. The response has been very positive, and I would like to have one ETC student, which is one of our public schoolteachers, share with you her thoughts on the program.

What better way to show off the impact of the program than to show student products. In the segments of these two PowerPoint projects, you will see regardless of grade level, faculty can learn technology side by side. Now, you are only going to see a very small part of their presentations. But I would like to share them with you. First, Judie Wharton used technology to guide special education elementary students in a science experiment from caterpillars to butterflies. She demonstrated her word processing skills by creating homework sheets for the experiment.

And at the ninth grade level, Linda George's presentation facilitates her students' social studies research probabilities about Africa. The assignment objectives and expectations are clearly outlined for the students in a visually appealing format.

I want to just add at this point, the one thing the instruction that I gave to our advisory committee in terms of putting these terminal competencies together is come up with a program that will allow teachers to develop lesson plans that they can take right into the classroom. What I didn't want to hear was a teacher saying, boy, that was a great course, you know, but now that school has started, I don't have time to do anything with it.

Lesson plans that they develop were approved for their terminal competence which then drove their grade. Benefits that have been realized within the learning community, first and foremost, we increased student access to technology, enabling them to develop skills required in today's work force. Through a core of technology competent faculty, we are changing the way instruction is delivered in Delaware.

We are helping teachers make effective use of that hardware/software and infrastructure. We have watched this core faculty at all levels serve as role models and mentors for their colleagues.

One public schoolteacher who was enrolled in our advanced certificate program was able to convince her entire school to sign up for the introduction TRI certificate. We, in turn, had the flexibility to hire her to teach the course with one of our instructors. What a powerful message that sent to everyone involved.

If I could leave you with a message today, it would be the following two recommendations: One, financial incentives should be provided for school districts to develop and implement integrated educational technology plans, which include all three of the links, technology, technical support, and training. And the second recommendation is that the act should specify that funding proposals for educational technology training include the community colleges as a partner.

The community colleges are where the majority of your teachers are going to learn how to get comfortable with this technology.

In closing, let us remember that our focus is on students, present and future, who will benefit from the ever-changing technology. We must be committed to using technology to improve student learning. And we must be committed to the basic tenets of good teaching. Teaching with technology is like teaching with new eyes. Envision with me learning environments that use technology to make connections and meaning, environments that allow our students to really understand, communicate and apply knowledge.

What will we have given our students if we make these environments a reality? Well, as John Snyder points out in Teaching with New Eyes, we have given them treasure that will be measured in lives transformed by insight. Thank you, Mr. Chairman.

[The statement of Mr. George follows:]

WRITTEN STATEMENT OF DR. ORLANDO GEORGE, JR., PRESIDENT, DELAWARE TECHNICAL AND COMMUNITY COLLEGE, DOVER, DELAWARE – SEE APPENDIX B

Chairman Castle. Thank you, Lonnie. We appreciate that, and I think you are going to have to leave almost immediately, but I understand there are people here from--

Mr. George. Dr. Susan Zawisklak and Charles Poplos, who probably know more than I do about this.

Chairman Castle. Maybe they could come to the table and answer questions. Thank you, we really appreciate your testimony here.

Next we will go to Dr. Wayne Hartschuh. I hope his necktie will show up on television. Is it the Roger Neilson's coach of the Philadelphia Flyers who wears these wild ties and they are always sending him ties? I think after seeing these Internet ties, they will send you ties for everybody to see. We appreciate you being here.

STATEMENT OF DR. WAYNE HARTSCHUH, EXECUTIVE DIRECTOR, DELAWARE CENTER ON EDUCATIONAL TECHNOLOGY, DOVER, DELAWARE

Mr. Hartschuh. I thought that this would be an appropriate tie for this situation.

Good morning, Mr. Chairman and Members of the Committee. Thank you for inviting me to participate in this hearing on educational technology in Delaware's schools. As you said, I am Wayne Hartschuh. I am the Executive Director of the

Delaware Center for Educational Technology, or DCET, as we call it here in Delaware.

Let me start by giving a brief overview of DCET. As Governor Carper alluded to, he did sign legislation that created the Delaware Center for Educational Technology with the purpose of creating a modern educational technology infrastructure in Delaware's public schools to enable students, through the use of educational technology, to meet academic standards set by the State Board of Education and to develop the skills needed by a world-class workforce.

As a public education entity in the State of Delaware, working closely with the Delaware Department of Education, the Office of Information Services and the districts, DCET embarked on a three-year project to wire every public classroom in the State. For the record, we didn't just put a data drop in every classroom, we installed at least one data line, a telephone line, a coaxial cable for video and two strands of fiber.

At this point in time the project is complete, and we are proud to point out that the project was completed on time and within budget. Another point we are proud to make is Delaware is the first state in the Nation to have network access in every public schools classroom in the State.

The reason for installing the infrastructure and wiring every classroom is reflected in the vision statement, and this is the First State coming back to you: The First State in Education: Every Classroom, Every Teacher, Every Child, is the DCET vision.

The vision of DCET reflects an absolute commitment to the principal of equity, ensuring every teacher and every child in each of our public schools and classrooms is provided with an equal classroom to utilize technology in the educational process. This vision also reflects a fundamental belief that technology in education is critical to the creation of a competitive 21st century work force and that a competitive work force is a major contributing factor to strengthening and maintaining Delaware's economic viability.

The efforts of DCET have been nationally recognized. We have received a Computerworld Smithsonian Award for our classroom networking project. The project is part of the 1998 information technological innovation collection that was formally presented to the Smithsonian Institution last April. A brief description of all of the award recipients, including DCET, is currently on display in the Smithsonian National Museum of American History.

Although the telecommunications infrastructure is now in place, we have a high-speed network connection in every school. We have every classroom wired to the Delaware Educational Network, including the Internet, and we have received a very prestigious award. I really don't get too excited about the wires in the walls. What I do get excited about are the educational activities that can be enhanced because of those wires in the wall.

The excitement lies within the schools where teachers and students are utilizing the Delaware Education Network and the Internet. In Milford, the middle school students are creating a website connecting their school with the community and communicating with students with other cities and towns across the country named Milford. In Appoquinimink, teachers and students are participating in a collaborative project on

Monarch butterflies.

Numerous teachers across the State, from Brandywine in the north to Delmar in the south, are creating Web Quests, instructional activities, designed as Web pages to allow the students to find and synthesize information on the Internet. In addition, UDLibSearch, a resource provided through the University of Delaware, and I am sure something Tom will talk about later, it provides on-line access to research material to all of our high schools and middle schools.

Now these activities I have just discussed are directly related to the network and the Internet. I always like to mention that there are equally effective educational technology tools that are not connected to our network such as graphing calculators and word processing devices. In other words, there are more to technology than just computers.

I always strive to tell people that we need to match the technology to the situation. The U.S. DOE has stated that we should strive for a ratio of students to computers to be 5 to 1. In Delaware, we have stayed 5 computers per classroom. Basically the same with an average class size of 25 students. In many cases, a ratio of 5 to 1 or 5 computers in a classroom will suffice, especially at the elementary school level.

But in other cases, rather than computers, we might want to have a classroom set of word processing devices for an English class or classroom set of graphing calculators for a math class, more effective technology for the situation and roughly at the same cost.

In Delaware, I envision at least one computer in every classroom for, at a minimum, administrative uses of the teacher. This is in support of the DOE integrative pupil accounting and curriculum management initiative that will standardize these administrative functions across the State. Iris Metts has briefly just talked about this earlier.

The first step is pupil accounting and we have taken we-are-all-in-this-together approach. DOE is putting the system in place. DCET is supporting the operation of the system with servers and the districts are responsible for the end user computers, with the intent being every teacher having access to the system in their classroom.

An excellent decision was made by the State to lay the groundwork for growth by installing and supporting the telecommunications infrastructure to every classroom. Across the State, we are currently addressing the growth and the effective implementation of technology-related activities in the classroom. I am proud to say that we are making steady progress forward.

Thank you.

WRITTEN STATEMENT OF DR. WAYNE HARTSCHUH, EXECUTIVE DIRECTOR, DELAWARE CENTER ON EDUCATIONAL TECHNOLOGY, DOVER, DELAWARE – SEE APPENDIX C

Chairman Castle. Thank you very much, Dr. Harschuh, we appreciate it. Now we will turn to Tom Sloan, who is our State Librarian. I worked with Tom on a couple of occasions in terms of some announcements we have made in our libraries, and I can tell you that he has a very interesting story to tell, and they are very advanced from a technological point of view. So we appreciate Tom being here. Mr. Sloan.

STATEMENT OF MR. TOM SLOAN, STATE LIBRARIAN, DELAWARE DIVISION OF LIBRARIES, DOVER, DELAWARE

Mr. Sloan. Thank you very much, and I want to add to the welcome to Delaware and the Glasgow High School Library. You honor the libraries of this State and this Nation by selecting a school library as a site for this important hearing on the reauthorization of the Elementary and Secondary Education Act.

Your presence recognizes that the school library media center is essential to learning and is the information hub of 21st century schools. To that end, the reauthorization of ESEA should ensure that students and staff are effective users of ideas and information. It is the school library program that provides the intellectual and physical access to learning materials in all formats.

It is a school library media staff that provides instruction to foster literacy and stimulates interest in reading, viewing and using information. It is a successful school library program that is able to work with teachers and students and parents to design learning strategies to meet the needs of individual students.

ESEA could provide incentives to establish, maintain and expand school library media programs that improve student achievement, as research studies have shown. In Delaware we use ESEA title VI to acquire sufficient school library materials to provide school library media specialists to work with students and teachers and to incorporate new technologies into the curriculum and into learning.

Why should Federal funds be spent to support school library media programs? Because the quality of a school library media program is critical to student achievement. The findings of two major studies have concluded that strong school library programs are predictors of key student success.

A federally-funded study documents the positive impact of school library media programs on the academic achievement of 221 Colorado public schools. The 1993 Colorado Department of Education study shows that when school library media expenditures on staff and collections are high, student achievement is high. Specifically the study shows that where school libraries are better funded, regardless of the school being in a rich or a poor community, regardless of the community having adults who are well or poorly educated, student achievement is higher.

The study also found that better funding for school libraries fosters academic achievement by providing students access to more library staff and larger and varied collections. Additionally, students whose library media specialists participate in the instruction process and teachers who use the instructions center of the media library program result in higher test scores. The report found that among predictors of academic achievement, the size of the school library media program staff and collection is second only to the absence of at-risk conditions.

The second report, titled "The Power of Reading", reviewed hundreds of research studies conducted in the 19th and 20th centuries that explored the power of free voluntary reading; that is, reading that a young person is not assigned to do but rather chooses to do. Results show that free voluntary reading is the very best predictor of reading comprehension, vocabulary growth, spelling ability, grammatical usage and writing style.

The results also show that the best way to promote student reading achievement is by creating print rich environments, providing large library collections, reading aloud and using sustained silent reading, promoting positive reading habits and modeling reading by parents, teachers and friends.

These two national studies showed that well-funded school library media programs are essential to successful teaching and learning outcomes. Today, library and information technologies are keys to providing a successful school. A national model technology initiative is ICONnect. ICONnect is sponsored by the American Association of School librarians and is designed to engage students, school library media staff and teachers in using the Internet.

ICONnect resources help students develop information and visual literacy skills. The project promotes school library media specialists and teachers with training in effectively navigating the Internet. ICONnect very importantly develops Internet connections for teachers and students in support of curriculum and learning. And also important, it assists parents in guiding their children to using appropriate Internet resources.

ICONnect has attracted private sector support from such information and technology firms as Microsoft Corporation and EBSCO publishing. This support has allowed the successful demonstration of ICONnect; however, additional funding is required to implement ICONnect technology projects in schools throughout the Nation.

Immediately after this hearing, we invite you to a demonstration of the ICONnect project. Allison Kaplan is here today, who is coordinator of the school library media specialist program at the University of Delaware, and she is also a member of the National ICONnect Committee. She will provide an ICONnect demonstration out in the main part of the library.

In Delaware, a very successful library and information technology project for schools is UDLib/SEARCH, and you will see a banner of the program up on the wall. This is a joint project of the University of Delaware Library and the Delaware Department of Education. The UDLib/SEARCH project provides all Delaware public high schools and middle junior high schools with on-line access to full text magazines, journals and encyclopedias.

The University of Delaware Library negotiates contracts with database vendors, ensuring a very advantageous cost per school ratio. Equally important, University of Delaware Library staff provide training sessions for teachers, school librarians and other school staff on using the on-line resources.

Following the hearing, Dr. Sandra Millard, an assistant director of the University of Delaware Library, and Ms. Suzanne Smith, the school library media specialist here at Glasgow High School, will provide a demonstration for you of the UDLib/SEARCH project.

To conclude, I ask that you reauthorize ESEA to provide targeted incentives to establish, maintain and expand school library media programs. As we do in Delaware, ESEA should assist in funding school library materials in all types of formats. ESEA should assist in funding qualified school library media specialists to work with students and teachers. And importantly, ESEA should assist in funding new library technologies that connect the curriculum to the resources needed for learning.

Thomas Jefferson stated in the 19th century that a democratic society depends upon an informed and educated citizenry. America's school libraries are at the forefront of creating literate, informed and lifelong learners. Our school libraries must succeed if we are to be a 21st century democracy.

Thank you for this opportunity to speak on these important matters. And please do join us after the hearing for demonstrations of the national ICONnect project and the Delaware UDLib/SEARCH technology project. Thank you.

WRITTEN STATEMENT OF MR. TOM SLOAN, STATE LIBRARIAN, DELAWARE DIVISION OF LIBRARIES, DOVER, DELAWARE – SEE APPENDIX D

Chairman Castle. Thank you, Tom. I hope we will have time after the hearing for that. We will have to see when that time comes.

Let me next turn to Dr. Fischer, and thank you very much again for hosting us in your school district today. And if you will excuse me for a minute, I have to run outside for one second. But we look forward to your testimony, and I will be right back.

STATEMENT OF DR. NICHOLAS FISCHER, SUPERINTENDENT OF SCHOOLS, CHRISTINA SCHOOL DISTRICT, NEWARK, DELAWARE

Mr. Fischer. Thank you all for coming here today. On behalf of the Christina Board of Education, our staff, students, parents and the communities, I want to welcome you to Delaware's largest public school district, where we are proud of our diversity, we are proud of what we have done, and we are proud of what we are doing to improve. We believe that we can and we will improve student achievement.

It is fitting that you have come to Glasgow High School where technology supports instruction and the administration of the school. Federal funds have made a distinctive contribution to science education here through the National Science Foundation's funding of $750,000 for the Mesocosm project in environmental studies. Federal funds of $247,000 from Goals 2000, the Goals 2000 technology challenge grant have also been extremely helpful by supporting our efforts to improve instruction through planning and monitoring student performance at Brader Elementary School.

At our other schools, we have one computer for every four students, and we have to give credit, I believe, to Dr. Metts' vision while she was here in getting that process moving.

We have finally completed that process this year, and this is in comparison to a national average of one computer per every 15 students, understanding what Wayne was talking about that Delaware has got.

I also have to say that, as I am sure Wayne and others will agree, that we have much work to do in improving our maintenance and professional development for the use of computers. It is obviously one thing to put the computers in place; it is another thing to have people using them effectively. And I know Dr. Smith will be speaking to his efforts to do that in Milford.

Thanks to Governor Carper and our legislators, all of our schools are wired for worldwide access to information. In fact, every classroom has an Internet link. And in a way, I think it is very good to think about, this is during the time when many of us were growing up when we went into a library with 100,000 books, we thought that was awesome, it was huge, it was unbelievable. Today simply by three clicks a student can get access to over a million books and all other multimedia sources.

I think those multiples may clear the value of technology. I also believe that we will be able to address many of our maintenance and professional development needs through the State and local taxpayers generous support of technology in the form of $3.8 million during the 3-year period starting the school year. These are the technology funds that the Governor was referring to earlier.

There are days when I feel that we need a new form of bilingual education to enable us to understand the language of technology. I say this to highlight an ongoing concern. I believe that we all must make clear what we want to do with technology and do so in plain language.

I think it is important to remember that the term technology refers to things that help us work more effectively, or provide the things that we need or desire. The question is, what is the work ahead of us and what do we need or desire.

I want to suggest that Federal efforts need to support innovation in four areas. One is training and retraining of the work force for employment. The second is training of school age youngsters in the uses of technology, starting with computer literacy obviously, so that youngsters feel comfortable getting onto and working with computers. The second, which we need to mention, is obviously using technology to enhance instruction. And the third, as students get more sophisticated, is learning how to get involved in hardware and software development.

I know that in one of the schools in our areas Microsoft is involved in a partnership to help students become software engineers. There is obviously a lot of steps we can take in that direction.

The third recommendation I would make is supporting our ability, as Dr. Metts is talking about, to create systems that monitor student achievement and techniques that help improve student achievement.

The fourth would be supporting the creation of administrative systems that reduce paperwork and bureaucracy and increase person-to-person contact in areas such as finance and human resources. I think one of the realities of reform is that it's roughly 3 years down the road from giving the money. Many legislators are asking what impact did my dollars have? When you connect student achievement with dollars, it helps to understand that impact.

Federal funds have historically been a source of innovation in dollars for serving those least well served. In the area of technology, I believe that continuing to support both purposes will help. I also believe that a great service could be provided, as Governor Carper alluded to, by bringing people together nationally and regionally to discuss the best practices in providing services to students and parents through technology.

I want to thank you very much for the opportunity to speak with you today.

WRITTEN STATEMENT OF DR. NICHOLAS FISCHER, SUPERINTENDENT OF SCHOOLS, CHRISTINA SCHOOL DISTRICT, NEWARK, DELAWARE – SEE APPENDIX E

Chairman Castle. Well, thank you very much Dr. Fischer. I missed most of your testimony, but I glanced through it, and I have some sense of what you were saying.

And finally the final speaker, the cleanup hitter in this panel who has already been introduced is Dr. Robert Smith, who is the head of the Milford School District in Delaware. We appreciate you being here too, Doctor.

STATEMENT OF DR. ROBERT SMITH, SUPERINTENDENT OF SCHOOLS, MILFORD SCHOOL DISTRICT, MILFORD, DELAWARE

Mr. Smith. Thank you for the opportunity to speak to this illustrious Committee today. The cost for putting modern technologies in classrooms is often beyond the reach of many school districts and schools in America. Even those who are fortunate enough to get grants in aids to set up systems, too frequently they do not have recurrent funding or expertise to sustain them.

At a recent analysis in the Milford School District, it was determined that it took a minimum of $120 per student per year to purchase and sustain a 1 to 4 ratio of computers to students, and it will take us 6 years to accomplish that task. It will take another $60 per student per year for the hardware network support that is needed and $20 per year for the student software and applications and their Internet access.

This total is over three times the amount that the Milford School District has historically allocated for yearly curriculum purchases and is a burden that most districts simply cannot bear.

The Milford School District has been fortunate enough to receive two recent Federal grants for technology. One grant of title III of ESEA is enabling the district to purchase two to three computers for all district second grade classrooms, and to provide all second grade students with take-home Sony play stations with educational software that will extend their structured learning time beyond the regular school day.

This is part of the Lightspan project that our governor spoke about earlier. We anticipate some good results based on the data of schools who have been in this program for 2 and 3 years. We are just starting with that program this year with the take home.

Our second grant was part of a Federal challenge grant that came to Delaware to pilot instructional management systems. This grant will provide approximately $1 million in funding to the Milford School District over a 5-year period. These funds are being used to build a student and instructional data system that will help our teachers and administrators to track the effectiveness of units of instruction, to make appropriate modifications that will enhance student performance and achievement.

Approximately 70 percent of these funds will go for software and staff development, 30 percent for hardware. The district is seeking local and state funding for the majority of its hardware and support needs so this effort can be sustained when the Federal funds are gone.

One of the most significant findings, and I think this is important, to date concerning the instructional management systems is that as we looked at that system, we found that they were not assessment-driven or interactive tools, but basically were electronic repositories for curriculum resources, instructional objectives and lesson plans.

Most of these systems were tedious to set up and there were no care of short-term payoffs to teaching and learning. In a sense they were like a car without an engine, meant to take you someplace, but without the power to get there.

By adding software that will track student, individual students, grades and schools by performance on formative and assessment_and summative assessment items linked to state standards and instructional objectives, we will add the power and meaning to the instructional management system.

Teachers and schools will be able to critically evaluate the success and weaknesses of their current practices, and this will become the driving force to modify curriculum and instruction through use of the instructional management system. Gaps in the curriculum will be identified as well as inappropriately matched practices and techniques.

The strengths of the curriculum and instruction will also become evident. Exemplary practices will be identified and recorded in the instructional management system as a resource for all teachers.

Teachers with low-performing students will have ready access to lesson plans and digitized video to help them improve their instructional content or techniques and to produce higher levels of student achievement and performance. We estimate it is going to take 3 to 5 years to fully implement this system.

Due to the significant recurring costs of technology and the time needed for staff development and full implementation of a technology initiative such as this, it is recommended that federally-funded projects be of sufficient funding and duration to ensure at least two complete replacement cycles of the hardware and the software applications.

Given the rate of hardware and software evolution, a replacement or a step down cycle should occur in approximately 3 years of usage. It is also recommended that the Federal contribution to a technical project generally not exceed 40 percent of the total costs of the project. Most projects should have a range of funding between 25 and 30 percent.

This would greatly increase the probability of project continuation after Federal support has been withdrawn. Federal funding should be contingent on local and state match along with a plan for assuming end of project costs. The projects that are highly experimental in nature should be excused from those kinds of requirements.

The Milford School District has developed the computer replacement cycle that is not contingent on Federal funding and that will enable the district to obtain a 1 to 4 student to computer ratio within 4 years and sustain it through 2006.

And I am going to skip some of that testimony because it is there to be read. It tells you how we are going to do that, but that is not the important part.

The Milford School District had a 6-year Federal commitment for 25 percent of the costs of its core technology initiative. That initiative could be sustained through 2012 and provide adequate time for districts to find the funds necessary to continue this initiative indefinitely.

I think it is important that we start looking at some of the core funding for the core technology. What I am talking about there is one computer for every classroom in America.

Projects such as this should be explored for funding as they have the greatest potential for making long-term improvements to our schools. Every educator must have at least one network computer in his or her classroom. It must be as dependable as the chalkboard.

These computers need to be networked and equipped with an Internet browser, e-mail, productivity software, student accounting and instructional management software, teaching and learning applications specific to the type of instruction going on in the classroom.

Successful technology projects must also have a clear and inspiring vision for what is to be accomplished. Let me give you a couple of examples from the Milford School District vision statement. Technology will be used in the Milford School District to enhance the human potential of our students and staff. It will be used to enhance productivity in self-directed learning. Technology will be used to enrich the human experience.

It will be available wherever and whenever teaching and learning takes place with equitable and appropriate levels of access by students and staff. It will become a critical tool for research, analysis, communication, demonstration, simulation and expanding content knowledge. Technology will be used to change student progress towards targeted academic goals.

It will be used to record and analyze performance and provide critical data for specialized interventions. In many cases, technology will be used to help deliver those interventions.

We took this vision to the community in 1996. We repeatedly demonstrated the hardware and the software to our community using real-life applications and public information meetings and forums throughout the school district. We used multimedia presentations to pass a bond referendum to fund our core technology initiative. This bond issue was first voted in 1994 without demonstration and use of technology and was defeated by a 3 to 1 margin.

In 1997, a similar bond referendum was conducted with the use and demonstration of technology and was won by a 2 to 1 margin. Technology was highly effective in communicating the district's vision and it's needs. Technology is making a significant difference in the Milford School District. Since our major infusion of technology in 1997, the district has seen a 15 point gain on the SAT scores in both verbal and math, and is fourth out of 19 districts on the overall 1998 Delaware assessment.

This has been accomplished with a student population that is 33 percent minority, 51 percent low SES. Technology is not solely responsible for this improvement but has definitely played a major role. The district's technology training for staff has not only improved their use of technology, but it has also changed instructional techniques and curriculum content that we believe is driving our improvement in student performance.

The district has been very aggressive in providing many different kinds of staff development opportunities in technology. In 1996, the district first developed teacher and administrator competencies for technology usage. We then developed a multifaceted program for staff development to help teachers develop these competencies.

Staff move at their own pace through three technology proficiency levels and must demonstrate proficiency at each level before moving on. One-time stipends are paid for mastery, and we are currently exploring long-term performance pay for meeting these technology competencies.

The district has also recognized the need for ongoing staff and system support. The district used an assistant principal position to hire a supervisor of instructional technology in 1997. This person is responsible for helping staff use technology effectively and insuring that our technology system supports and enhances teaching and learning.

There are four technicians under this supervisor who keep our systems operating effectively. Technology is making a difference in the way our teachers teach in the Milford School District. Since September of 1998, when every teacher in the district was provided a high-end computer in their classroom, we have observed more engaging and interactive lessons; more varied teaching strategies and techniques; more current and relevant content being presented; better tracking of student progress taking place; better analysis of teaching and learning; more professional communication and resource sharing among teachers, and that is very critical, it is a very important piece; and higher quality of teacher-generated materials and presentations.

We have also observed changes in student behavior. We have observed more self-directed learning taking place with our students, more in-depth student research being conducted, more enthusiastic learners, increased student productivity, and greater time on task with more focus on the activity at hand.

Technology is changing what we teach and how we teach it. It is becoming an invaluable resource to teachers and students for research and acquiring new content knowledge. We are beginning to use technology to deliver some types of instructions and to track individual student progress on our State standards and grade level proficiencies. It is becoming a critical tool in the analysis of our effectiveness and accomplishing our stated goals for students, teachers and our schools.

It is helping our administrators become more effective and efficient managers, and freeing up more time for them to exercise their educational leadership. The more that the technology becomes available, the more ways we will find to use it to improve teaching and learning in our schools.

I strongly urge the Committee on Education and the Workforce to support core technology initiatives in schools today, so that we as educators can better develop a well-trained and informed work force for tomorrow. Thank you.

[The statement of Mr. Smith follows:]

WRITTEN STATEMENT OF DR. ROBERT SMITH, SUPERINTENDENT OF SCHOOLS, MILFORD SCHOOL DISTRICT, MILFORD, DELAWARE – SEE APPENDIX F

Chairman Castle. Thank you very much, Dr. Smith. We appreciate that. And all of you have had a chance to testify. I am going to ask the two who replaced Lonnie George to say something in a moment.

Let me do a couple of things. One is, as you may have seen on the TV screens, we have students from Newark High School, which is nearby here, Dale, everyone else would know that I suppose, and Christina High School, which is also relatively close by.

They are here obviously through the connections that we have with the ability to video and go from there. We appreciate their abiding interest in this as well.

I would also like to say as far as the testimony, et cetera, is concerned, the Subcommittee is obviously bigger than just the two of us, but all of this testimony is taken from here, it goes down to Washington, it is analyzed, and it goes out to the Committee. So what you say does become very important in terms of all of that.

I wanted to ask the two individuals who replaced Lonnie George, do we dare say it took two to replace one? Don't let Lonnie hear that. He will have a big head over it. If you have a comment or two, maybe a minute or minute and a half, two from each.

But before I do that, let me ask my question. Normally in Washington, we take 5 minutes per panel per person, we take a little longer here, but we want to keep it somewhat limited. I am going to sort of put together three or four points and then ask the four of you to try to address that in a minute or a minute and a half yourself if you could each.

And it is basically this, we are worried about what we are doing at the Federal level. You are obviously more concerned about carrying things out locally then what we are doing at the Federal level. But I personally would be interested in your understanding, thoughts about any priorities we should have and any legislation that we are considering in terms of our programs.

With respect to technology, we have various ways of doing this, we have challenge grants and national challenge grants. Some of this is competitive. I indicated in my opening that we have a lot of different programs. Dr. Smith talked about this a little bit, but is it becoming confusing at a local basis, should we consolidate this? Should we be approaching it differently, are there other things that we should be looking at in terms of technology at the Washington level that we are perhaps not looking at now that would be helpful to you? Do you want more flexibility in terms of how you can apply for or use the various funds that may come from Washington, D.C.?

I think it is safe to say you are going to get increases. There have been dramatic monetary increases in programs for technology in Washington in each of the last half dozen years. I think that is probably going to stay the same, wouldn't you say, Dale? I can't imagine in this day and age that is going to get cut back very much.

So we are concerned about making sure all of this is handled correctly. I would be interested in your views on what we are doing in Washington. If you are not specific with these terms, the programs in Washington, don't worry about that, just give us general answers about where you think we should go.

Before we do that, because Lonnie had just high praise for your knowledge, I thought we would give Dr. Poplos and Dr. Zawisklak, a chance to speak to us for a minute or two each.

Mr. Poplos. Well, I can't do anything but agree with Dr. George, saying that the community colleges are a very effective partner, should be considered in any legislation. All school districts in the United States have access to resources of the community level, and we have demonstrated at Delaware Tech it is a very effective location for teachers to come. It is non-threatening, and it is a place where they can actually use technology in a hands-on environment, what they develop there tonight, because all the courses are after school, they can use tomorrow morning in their classrooms. And that has been one of the pluses in our book. I mean, I would like to see that continue and be mirrored all over the country.

Chairman Castle. Good, thank you.

Ms. Zawisklak. I would echo that as well, that technology, as we see it being used in the school today, has so many positive applications. And as a student in the program, I have learned so many things and have seen my colleagues also develop their skills further in a very short period of time.

Eighteen months ago this program was an idea in a few people's heads, and through the advisory committees that were formed up and down this State and the input from the K through 12 community, we have developed a program that has been able to meet many, many needs.

Chairman Castle. Very good. We appreciate that, and we appreciate you being here today. It is very helpful to have you backing up Mike. I guess we might as well go in order and start right here with you.

Mr. Hartschuh. Well, basically Delaware Center for Educational Technology is a little different situation than the districts and the libraries in the State, in that we are 100 percent state funded. We do not receive any Federal funds. Actually we are state funded basically through New York State, I guess, as Governor Carper alluded to earlier.

Chairman Castle. Be careful in your references, because that was Delaware against all the States, so Michigan is involved in that, too, so --

Mr. Hartschuh. As Governor Carper alluded to earlier, we did win a lawsuit. Delaware won a lawsuit with the State of New York, and that is where the money did come from. We are spending $30 million on our infrastructure, basically, as we move forward, as our infrastructure is mostly complete, the three things that we need to concern ourselves with -- and this is where we need to look for the additional funding and the help -- are maintenance and support. Nick alluded to earlier that they have got a 4 to 1 ratio of computers to students, and I guess 1 to 4 of students to computers.

And I am sure he will agree they have a major maintenance and support issue. That is only going to be resolved with funding to take care of the stuff that you have. We have procurement issues. You know, Christina is in very good shape. Milford is in good shape. They have one computer in every classroom now. But our ultimate goal is to have, you know, in the neighborhood of a 4 to 5 to 1 ratio in each classroom.

We need help with funding for procurement of not only hardware but software as well and other technology devices as well as computers.

And the last thing and probably the most important, and that is where I will come from, is a professional development. None of this is going to be used unless you teach the people how to use it and use it effectively. So that is what we are looking for, you know, funding issues, and that is where we are trying to get a balance between, not only local, but state and Federal funding to address those issues.

Chairman Castle. Thank you. Tom.

Mr. Sloan. I would like to make two comments. First, I think that as a person who works with several Federal programs at the State, we certainly do like flexibility. But I also believe we need leadership, national leadership on issues. And I don't think that you can simply defer on many cases to 50 individual states or to the thousands of school districts or the tens of thousands, hundreds of thousands of schools to necessarily make the right decisions on some issues which are of national importance.

And so I think there has to be a balance between both the flexibility and the use of money, but also clear goals and missions and clear accountability on the use of that money. And so I think that there really is truly a balancing act there. And I think many of us look to the Federal Government and look to programs like ESEA to provide some national goals and objectives.

The second comment I would make is, I read a week or so ago that less than 10 percent of the information created in the 20th century is available in any kind of electronic form, less than 10 percent of the information of the 20th century. We are not talking about prior centuries but just the 20th century. So as we look at the wonderful empowerment that technology brings, we also want to be careful that we continue to educate and create well-rounded, well-read individuals and you cannot do that simply by sitting down at a computer.

There is more to learning and there is more to life long learning than simply having a computer and having wires in the wall. And I think that in the future, maybe, you know, 50 years from now when the people are in this room at a hearing, that might be different, but it is not different for us today. We still need to recognize that for the total educational experience there needs to be a balance between print and technology, between traditional services and new and exciting services.

Chairman Castle. Thank you. Dr. Fischer.

Mr. Fischer. I would like to suggest four things for the Committee to consider, in addition to the recommendations I made during my statement. One of the things that Federal support can enhance greatly is the sharing of best practices, whether we like to say it or not, getting people together and simply having them sitting and talking with each other. I think it can really help them to understand what works instructionally and what doesn't. As the Congressman was alluding to, that is as important to know as what our successes are.

I think we do that both regionally and nationally. We have a vehicle through the regional lab structure or through regional educational networks that I think we should make use of, and sometimes I think districts are a little bit short in either travel funds or substitute funds that Federal grants can help out with.

The second thing I would like to underline is programs for talented students. I think sometimes in the rush to remediate, we forget that many students who need remediation are extremely talented, and I think we need both sides of the equation. And I think Federal support in that area would enhance support for what we are doing in a number of ways.

The third thing is you can bring a computer home, but if the parents don't know how to turn it on, you are not necessarily helping out a whole bunch. So I think parent education is critical. Simply linking parents to kids to computers can create a big step in helping students use computers at home.

What I have also recommended in that vein is that we know from adult education that literacy leads to literacy. We know that 25 percent of the adult population in the United States is functionally illiterate. In order to help students learn, we have to help parents learn, and I would strongly suggest Federal initiatives that enhance adult literacy to enhance children's literacy, so that in turn they can understand what they are seeing on the computer.

Chairman Castle. Thank you. Dr. Smith.

Mr. Smith. One thing I would like to say is, when computers are bought with Federal funds, there are often many strings on those computers. For example, who can use the computers, when they can be used, and even after those computers have basically served their life in the schools, there are things that could happen with those computers, like putting them into churches for after-school programs or putting them into community centers.

We step down our old computers that are bought with our local funds and state funds. We step them down to purposes such as that. We are unable to do that with the Federal technology, because of the way that the types of funds that they were bought with. That is an impediment. Those computers do not continue to meet the needs of the students in the classroom, but could be, as Dr. Fischer said, could be a mechanism for training parents and giving them exposure, first-time exposure, to some of the technologies. And I think that is very important.

The second thing I would like to state is that -- again back to the core curriculum, back to the core technology -- I think it is absolutely essential that every teacher in America have a computer on their desk that is linked to the Internet and linked to a wide area network. We hatched a good staff development and great programs prior to doing that, but really to have the change in behavior, the teacher change and the student change in behavior, it was not until we had those computers on their desk and working and every teacher having one that the technology initiative took off. That was the point where the technology took off in our school district.

I think that is important across America, that if you practice skills and don't have that computer backing their classroom to use it with, then that training goes for naught.

Chairman Castle. Okay. Thank you.

Mr. Kildee. Thank you, Mr. Chairman. Mr. Chairman, again you are right, your prediction that the growth in technology expenditure by the Federal Government would grow has come ture. In 1998, just in Title III, we spent $584 million, in 1999 it will be $698 million, and the President has asked for $801 million for fiscal year 2000.

Aside from Title III, you can get money from Title I for the Eisenhower program and Goals 2000 for technology. As a matter of fact, I was chief sponsor of Goals 2000. I was Chairman of this Subcommittee then, but the election of 1994 took place. However, there is no one I would rather have take my place than Mike Castle. So the Federal Government does recognize that this is a very important field.

Let me ask a question of those who have filled in for Dr. George. You talked about the certificate program and the knowledge gained during in-service training with technology. Let me see if you two or any at the table can talk about preservice training in technology. Are teacher training institutions leading or following what is happening in technology in our schools?

Mr. Fischer. I think it is a mix, Mr. Congressman. I think that institutions such as Del Tech are being extremely innovative and doing many things to reach out. I think the distinction is among those institutions that see themselves reaching out in the community to generate their market versus those institutions that see themselves waiting for people to come to them. What I think would be great is if there were a program of Federal incentives to lead people to do reaching out. And I think a critical part of that, which obviously Del Tech and the University of Delaware and Del State have done, is go out and ask people in school systems what do you need? It is one thing to create a proficiency, it is another thing to know that that proficiency is useful and practical. And I think that is a critical issue.

What we are constantly striving for, not to make this answer too long, is to have training be useful. Meaning if you are going to train somebody, have them be able to use it in the classroom, and I think that is the constant measure of success that we have to look at.

Mr. Kildee. How important is the Eisenhower program to technology?

Mr. Fischer. I think it is terrific in that it provides a great incentive. What I would want to suggest that you consider is putting a little trailer to it, which is that if people do it, they do long-term training. I think a one-act diagram is problematic. And I think what Del Tech and other institutions have done is to say you don't just do this once and learn it.

My own experience with technology is I had to redo it a whole number of times in order to get the skill, and I am fairly slow at it. But I think the experience is that it is like any skill, it is practice, and there should be an incentive to programs that lead to continuing practice.

Mr. Kildee. If anyone else wants to answer any of these questions, just feel free.

Mr. Sloan. I would add in terms of like schools of library and information science of which and as, you know, the University of Michigan has one of the best programs in the Nation, they have very proactively been engaged in information technology. As a matter of fact, many of the schools have changed their names and hired different types of faculty 'to make sure that the information science and information technology is a critical part of the core training that librarians are receiving today.

Mr. Kildee. I was very happy last year to get the legislator of the year award from the librarians of Michigan. I have been supporting libraries in my 33 years of public office. By the way, my son, who is a captain and ranger in the Army serving now in Kenya, has just been admitted to the MBA program at the University of Michigan where I went to school. So it is a very good school, and I thank you for your plug there.

Let me ask this question. What percentage of Delaware's library resources are dedicated as on-line resources?

Mr. Sloan. It varies quite a bit, because one of the efforts we have tried to make is to put new monies into the electronic resources rather than carving that out of existing budgets. And so, for example, the UDLib/SEARCH project is especially_is funded completely by the State, next year at $491,000, to provide the databases to all the schools, the middle schools and high schools. And that does not come out of their existing budget.

At the same time the library that we are sitting in_this school has 1500 students. The library we are sitting in has a budget to buy materials of around $20,000 a year. So the budgets are relatively meager in terms of buying print resources. And we certainly did not want to carve the cost of electronic resources out of those budgets, and so we have added money on top of those budgets.

Mr. Hartschuh. I would like to add something on the UDLib/SEARCHes. From the perspective as far as use of the network on the statewide basis, the UDLib/SEARCH is probably the best thing we have going on the statewide basis utilizing the network that we use in the State.

Mr. Smith. I would like to second that as a superintendent. Our teachers and our students find more practicality in the use of this program than anything we have put in schools in a number of years.

Mr. Smith. Could I just introduce, with that kind of praise, we really must introduce Dr. Sandra Millard from the University of Delaware Library, who envisioned the program, put it together, and has really been the champion of this. So thank you, Sandra.

Ms. Millard. Thank you.

Mr. Kildee. Come and visit Michigan, okay.

Let me ask one more question, Mr. Chairman.

Chairman Castle. Sure.

Mr. Kildee. Dr. Smith, you talked about the 40 percent local costs of the grant and you felt that maybe 25 percent over a longer period of time might give more permanence to the program. Could you expand on that some?

Mr. Smith. I just know in looking at technology and how long it takes to train staff to get them to be able to use the technology proficiently -- it takes more than a 1 or 2 or 3-year shot, it takes 6 good years to put a technology initiative in and have it internalized and become an established part of your educational program -- I would rather see less funding over a longer period of time and sustained grants for longer periods of time than have one shot of 100 percent funding or something like that come down and then not be able to sustain what we have started.

Mr. Kildee. You think that 25 percent would be enough to entice a school district to come into the program?

Mr. Smith. People would probably disagree with me on that and probably think it should be more. As I look at it, and just from a rural school district and looking at what our needs would be and basing it solely on that, other districts may need more, but just looking at what we would need to really sustain our projects long term for the core technology initiatives, 25 percent would be enough for us to do that.

Mr. Kildee. In the last reauthorization the language we put in was "up to 50 percent", so we have got 40 percent. But we might want to look at that language and see whether we can get input from elsewhere too. Would both of the superintendents concur?

Mr. Fischer. Yes, I think what is being raised here is a very important point. That is, do you value it if you have to put a little money into it yourself, and I think there is a value to that. I think that the role of the Federal Government is to oversee these kinds of projects, not to have to try to pay for them all, and I think in doing that it forces you to think through how committed you are to not only having the technology, but making effective use of it.

Mr. Kildee. Good. Thank you very much, Mr. Chairman.

Chairman Castle. Thank you, Mr. Kildee, and I happen to agree with that last statement. I think a lot of these Federal programs ought to be seed money and be willing to see what they are willing to do to go along with that. You might find out if they don't get it for nothing, they aren't that interested in it.

Let me thank this panel very, very much for being here. We appreciate it. We appreciate the fill-ins, I don't know if that is the right word or not, for helping Lonnie George, and what you have said is important to us, and we will try to learn from that. So thank you very much.

We will now form up our next panel. Okay. Have we organized?

Ms. Reissman. I think.

Chairman Castle. Let me introduce our witnesses if I may. This is our third, this is our final panel today at this hearing. And the first witness will be Sally Reissman, who is a third grade teacher at Lombardy Elementary School in Wilmington, Delaware.

It is my understanding that Ms. Reissman is working towards her Master's Degree in education technology, and that she is very involved in setting up a program at Wilmington College in coordination with Brandywine School District in the use of technology in the classroom. I hope that is all correct.

The second witness will be Mr. Charles, (Ted) Ammann. Is that how you say it, Ammann?

Mr. Ammann. Yes.

Chairman Castle. Who is the technology projects specialist for the Capital School District in Dover, Delaware. Mr. Ammann is the coordinator for a very innovative program underway in the Capital School District called the Lightspan program. It is my understanding that the Lightspan program is showing great promise for the integration of technology into the classroom, which is important, of course, and we look forward to hearing Mr. Ammann's testimony about this exciting program. Mr. Rodney Rivera is here with us and he is a former student of our host right here, Glasgow High School. He is now a student at the University of Delaware studying technology. We have asked Rodney to describe how he has been benefitted from the integration of technology into the classroom. We have also asked him to describe for us how the use of technology has prepared him for studies at the University of Delaware.

Mr. Mark Schonbach is here. We have met before, as a matter of fact, at another occasion at his school. He is a student at the Charter School of Wilmington, in Wilmington, Delaware. The Charter School of Wilmington is an innovative charter school with an emphasis on high economics, particularly in math and science. We have asked Mark to describe how technology has helped him in his school work and how he has benefitted generally from his incorporation in the classroom.

The same basic rules apply. You should take approximately 5 minutes to state whatever you wish, and then we can take a few minutes to ask you a questions about that.

We will start with Sallie, who I think has some technology to show us.

STATEMENT OF MS. SALLIE REISSMAN, TEACHER, LOMBARDY ELEMENTARY SCHOOL, WILMINGTON, DELAWARE

Ms. Reissman. Oh, no, I don't, but I think he does. I would like to though. I have a lot of my students' work. I would like to thank you, Congressman Castle, for inviting me to speak today.

I am a third grade teacher at Lombardy Elementary School in the Brandywine School District, and I am also pursuing my Master's in Applied Technology in Education from Wilmington College.

Wilmington College offered two scholarships to every school district in the State, free scholarships to two teachers to get them started in this technology program, which I thought was a wonderful idea on their behalf. I enjoy using technology in my classroom. I would like to share with you today some of the things that I have done in my classroom.

I don't consider myself a computer expert. I have had a computer in my home for several years, and I have learned to use_actually my husband is better at it than I am. But I have given a lot of thought to the question that you posed in the beginning about accessing technology in the future for schools, and access, I think Dr. Smith had said earlier, it needs to be on the teacher's desk foremost.

Many of the schools, like I don't have a computer at my desk that I can access. I have two computers at little workstations for the children, but the teacher needs the computer at their desk. And the reason I say that is because a fair amount of the time spent for a teacher is after the children leave, planning your plans, preparing information.

I started using my home computer for grades and letters to parents, lesson plans, worksheets, tests and charts like that. It made my life easier. I was able to create professional-looking documents and materials and to strengthen my computer skills at the same time.

Most importantly, I became a more productive teacher for my students. And as we all know, the teacher is the most influential element in the student's life, so anything that helps the teacher also helps the students.

Regardless of whether a teacher has a computer at home or at their desk, they have to have accessible software. And software in the schools, there is all different kinds of software out there. Management systems, like they said in Milford. Our school doesn't have that right now, but the packages have to be MacIntosh and Windows compatible, so if a teacher has MacIntosh at home or a Windows platform they can use the software either way, to then use it in a classroom.

The computer entered the world of education with the idea that it was going to help, and that every child would have a computer in front of them. But that is not an end to itself. Technology is definitely a tool, and a goal of technology integration into the classroom and curriculum is not to expose the students to the computers, but to have the computers become a tool for the teachers and the students to use for the educational purpose.

Technology, of course, can be the overhead projector, the computer, it could be a calculator. I have created a lot of different materials to use in my classroom with a computer, like colorful overhead transparencies that print out, graphics, time lines, worksheets, different things like that.

I communicate with my parents weekly with a computer-generated newsletter, and they have given me a lot of feedback that they enjoy having something professional looking. I always tell them what is going on in the classroom with this report.

Back in the early 1800s, you know, they thought that the chalkboard was the craze, and that it was going to make the difference in the classroom. I have a little quote here, the age of illustration upon us and illustrate we must if we hope to gain and hold the attention of young and old. So times really haven't changed.

My school recently acquired a TV that you can hook easily into the back of the computer in the classroom so that they can have the kids come to the rug and then listen to your instruction and have like a PowerPoint presentation up on the screen so the children can see what you are trying to show them, and so that they can then go to the computer lab or the computers in your classroom and understand what you are trying to teach.

I have spent the bulk of this time talking about how a computer could help the teacher, but it also does help the students. My school has a lab that has 15 computers. They decided that_last year they had 30 computers. They decided to take those computers out and put them in the classroom. I know that they said that all the schools are wired, and thank you to Delaware for doing that.

Unfortunately, there are a lot of classrooms that don't have one computer in their classroom yet, and so they may have like a library or a computer lab with 15 or 30 computers for the children to come to once a week, but they still need the computers in the classroom.

They receive instructional word processing in the lab that we have, how to use the Internet, software application, skill and drill and other activities like that. Most teachers in schools use the computer for reward or remediation. And I would like to see the teachers instructed, as I am becoming instructed, on how to integrate the curriculum that they already have and use the computer as a tool to enhance it.

So far this year, I have e-mail pals which are called keypals, where my children send letters back and forth, e-mail messages back and forth to students in Australia, and they are very excited about that.

So it integrates the letter writing that I am trying to do in a classroom. So they e-mail back and forth, and they talk about the culture and differences.

I have created a website for my classroom and each child is allowed to make like a little bio to put on the website about themselves. The parents can then access my website and find out information. So that has been very helpful.

I have started HyperStudio is an authoring software that our school is evaluating, and I have the students in my class using it in partners. And you should see them, they are so excited when they get to go to the computers to do the HyperStudio activities.

I had a little boy come in with a stack of National Geographics this high and we were studying the human body, but he says, Mrs. Reissman, I really want to do something on national disasters. Well, he made 16 cards, which is a great deal of information, and he had everything from earthquakes to tornadoes.

I don't have statistics, other than what I see. They thoroughly enjoy having the computer there, but it is the teacher that has to train the child how to use it properly. Just getting on the computer and playing isn't going to benefit the child with the curriculum.

We also have different programs like Oregon Trail. When I was teaching the children about colonial times and the frontiers, they got on there and they use the Oregon Trail to understand that curriculum better.

I would like to add before I finish that technology is not just the computer or the Internet. In previous years, I have also had my students engaged in making videotapes of something called book chasers that we titled it. It is like reading rainbow videos where they critique a book that they have read.

We have also done clay animation, kind of like a Gumby movie and using videotapes and taping for that, recording a book on tape or building an igloo from recycled milk jugs. Technology is everything from the chalkboard to the computer. And as curriculum becomes standardized, the technology made available to teachers will only enhance their instruction.

Teachers and children will learn to use their tools to become productive educators and members of our society. We need to place a computer on every teacher's desk and provide training for proper integration. As more households purchase a computer, the gap will close. The future educators will have grown up from birth. But a teacher will always be needed to guide our children with whatever tools the future may present.

[The statement of Ms. Reissman follows:]

WRITTEN STATEMENT OF MS. SALLIE REISSMAN, TEACHER, LOMBARDY ELEMENTARY SCHOOL, WILMINGTON, DELAWARE – SEE APPENDIX G

Chairman Castle. Thank you very much, Ms. Reissman, we appreciate that a great deal. We look forward to talking to you a little more here. Mr. Ammann.

STATEMENT OF MR. CHARLES AMMANN, TECHNOLOGY PROJECTS SPECIALIST, CAPITAL SCHOOL DISTRICT, DOVER, DELAWARE

Mr. Ammann. Good morning, members of the Committee and members of the legislative and educational community present here. I am honored to have an opportunity to share with you information regarding our Technology Innovation Challenge Grant entitled the Capital School District, State of Delaware Interactive Educational Television Consortium, quite a long title.

The Technology Innovation Challenge Grant Program has awarded 82 large-scale developmental projects intended to produce carefully designed and evaluated practices and products. These products and practices can be disseminated on a national basis for local adoption or adaptation by schools and districts. A variety of other Federal, State and local funding sources, such as the Literacy Challenge Funds, Title I and Goals 2000 can be used to fund the local adaptations of these products.

The challenge grant projects are competitive grants to consortia of schools, businesses and universities across the country. The projects have become a highly valued resource for schools seeking technology solutions to meet educational needs. President Clinton awarded our Technical Challenge Grant in October of 1995 as one of the original 19 grants. President Clinton encouraged us to work together to help our schools to use technology to revolutionize American education so that all children will be able to learn better and teachers will be able to be more effective.

The Capital School District Consortium Grant was conceived to address a number of issues prevalent in many school reform movements. Using technology, we are bridging homes and schools in a variety of ways to meet four main goals. Goals are: Extending the school day, increasing parent involvement, providing equity in technology distribution, and also providing in-service to much on the integration of technology.

As with any reform movement, an overriding goal is that of increasing student achievement. And I will address that shortly. As emphasized by the Department of Education Challenge Grant Program Director, Thomas Carroll, the grant money was intended to be seed money. This money would serve as a catalyst for public and private sectors to work together to make an impact in the educational technology arena. As such, the implementation of this grant relies heavily on the partnership of schools, businesses, and school communities.

A significant partner, the Lightspan Partnership, provides three components that utilize the latest technology. The grant prides itself on bringing these commercial technology applications to the educational community as they are released.

The previous technologies, they were commonplace in the business and entertainment sector for years before they would find their way into the schools. You hear the story about overhead projectors being in bowling alleys many, many years before they were even in classrooms. The primary component consists of interactive educational software that keeps in perspective that a child's work is play. Most significant is that the software is available in the classroom computers as well as portable devices that can be sent to the student's home.

It is in my capacity as the technology project specialist that I am here today. I have been coordinating the implementation of this reform project in schools throughout Delaware. With 36 schools and more than 400 teachers in the project, training is of paramount importance. Prior evaluation results indicated that technology can't be implemented merely using a proximal approach. Having the technology in close proximity to the teachers and students doesn't ensure that it will be used appropriately. I work with educational consultants and teacher trainers to coordinate the training of teachers and parents to use these resources effectively.

While I see the positive influence that this grant has provided to teachers, to parents, and to students on a daily basis, more telling is the documented research report completed by Dr. Susan Giancola, a senior associate for Evaluation of the Delaware Education Research and Development Center at the University of Delaware. At this point I would like to focus on that report and share with you its findings. The focus of the 5-year evaluation is to provide information regarding how well the project has met its objectives. Researchers have been measuring the project's progress towards these objectives using a variety of methods, including increasing learning time through parent involvement.

Many parents whose children participate in the project reported that the amount of time their child spends watching TV has decreased significantly since the involvement with the project. Further, about one-third of parents indicated that the amount of time that the child spends during school work has increased and has_as has the amount of time the child spends participating in family activities.

The students confirmed the parent findings as almost half of the students said that they like the program so much that they would rather use the software than watch television. In fact, students who use the software programs at home with a grown-up said they like the programs even more than the students who worked individually.

Parents have been pleased to be a part of this exciting project, and supporting testimony from parents who have participated have shared their experiences. Kristine Simon of Dover, Delaware, a single parent of two children involved in the project, said before becoming involved in the grant, homework and reading practice was a fight to the bitter and frustrating end. Those of you who have students and children at home may know about this.

She went on to claim that the Challenge Grant is exciting enough to grab and hold the attention of both of her children. Parents of students involved in the project throughout the State have expressed similar sentiments. Diane Albanese, a parent in the Cape Henlopen School District, noted that her son, Alex, came home one day and told her they had a "eyeball" in the classroom; that is, his third grade class would be featured on the Internet. Sure enough when she connected with the H.O. Brittingham website, provided by the grant, there they were, Mrs. Joseph and the class, learning about spelling and doing math activities. She was fascinated watching her children learn, and that was precisely the effect that was intended.

A teacher stated it definitely brought more parents into the school setting and into finding out what is going on in the school. Some of the families that became involved in the project are families that may not have typically been involved in school activities.

Equitable access to technology: In the past few years, technology has become a commodity. The gap between the haves and the have-nots will dramatically increase if equity concerns are not addressed at the local school level. Some families will be able to provide the technology for their students while others, due to a lack of resources, will not be able to.

The consortium has devoted its effort to include at least one school in every Delaware district with elementary school students grades K through 4. These schools were selected based upon having the greatest percentage of free and reduced lunch price eligibility. These students are the ones at greatest risk with the fewest resources to acquire technology in all of its promise.

Improved achievement. Reading and mathematics achievement tests were administered to students. They were given the Stanford9 open-ended format in both the Fall and the Spring. Second graders increased their math and reading test scores significantly over the course of the year. Student achievement scores were further analyzed in relation to a national population. Students significantly increased both their reading and mathematics achievement scores in relation to this reference population. In fact, on average the students outperformed 15 percent more of the students in the reference group in the spring, raising the average percentile score by 15 points. And that was based on a very short rotation because it was early in the project. On the math assessment, students increased their standing by an average of 14 percentile points. With such significant results, we have submitted another Challenge Grant proposal that would include an estimated 2800 additional children from the lowest income families who currently live in public housing projects.

In closing, the Capital School District, State of Delaware Challenge Grant has been able to serve the needs of 10,250 students and families from 36 participating schools. More than 400 teachers had taken part in the project receiving a total of over 1,000 days of staff development. This has translated into a new paradigm of integrating technology not only into their school day but into their homes as well. More than 700 classroom computers have been provided, along with software that is instructionally in line with Delaware and National standards. Without the significant contributions made to these schools through the challenge grant, many of these opportunities would not have been made available.

The Innovation Challenge Grant Program focuses on development and dissemination of promising practices and products that use technology to improve teaching and learning. The competitive process used in funding this project ensures that our consortium goals were in line with the major program indicators outlined by the U.S. Department of Education. These indicators were to target under-served populations, serve as a major professional development resource, leverage partnerships with business and industry, and emphasize the evaluation of technology impact on learning. We have met this challenge.

Chairman Castle. Good. Well, thank you, Mr. Amman, we appreciate those comments, and we appreciate talking to you a little more too.

[The statement of Mr. Ammann follows:]

WRITTEN STATEMENT OF MR. CHARLES AMMANN, TECHNOLOGY PROJECTS SPECIALIST, CAPITAL SCHOOL DISTRICT, DOVER, DELAWARE – SEE APPENDIX H

Chairman Castle. We will go to Mr. Rivera. And now we are ending a part of this program which is very important, because we now have two students who have used technology and can tell us, do all of these things that we, as Congress, and you, as teachers, and the administrators over here, are talking about: Is it really working, or are we off on a wrong track and should we be doing it a different way?

So you two, and maybe the students at Newark High School who are still with us, become very important people in terms of straightening out the adults, in terms: Are we really helping you with your educations? It is up to you. Mr. Rivera

STATEMENT OF MR. RODNEY RIVERA, FORMER STUDENT, GLASGOW HIGH SCHOOL, STUDENT, UNIVERSITY OF DELAWARE, BEAR, DELAWARE

Mr. Rivera. Good afternoon, Members of the Committee. The use of technology in the classroom has enhanced my education and created opportunities that have led me to be a successful student and successful in my personal life.

As a freshman in high school, I used the technology for learning the basics of computer programming. My teacher allowed me to progress through at my own pace through the course. This freedom allowed me to excel and move through the material without having to wait for the rest of the class. Also during my sophomore year, I was offered the opportunity to create and maintain the Glasgow High School Web Page.

This job gave me a chance to build and expand upon my knowledge of the programming languages and techniques. Through these experiences, I have been able to learn the necessary techniques for computer programming that I still use today in my college Computer Science classes.

In my junior year, I was able to participate in the planning and installation of technology into the classrooms at Glasgow High School. Each classroom at Glasgow received 3 computers to be used for Internet access, word processing, and other educational software. Our library's own catalog was placed on-line which enabled me to do research for projects both with Glasgow's library and other libraries throughout the State.

My senior year, the software was being purchased as a supplement for the school's textbooks. Unfortunately, the software arrived too late for the teachers to begin integrating it into their curriculum for my senior year.

As I returned this year to speak with my former teachers, they showed me their new software and how they had integrated it into their curriculum.

My Physics teacher purchased interactive software which enabled students to construct systems of inclined planes, pulleys and weights. The software animates how the systems work and gives instantaneous values for each value of the system. The Chemistry teacher also integrated his computers into the labs so the students could use the hardware and the software purchased to achieve more accurate and precise measurements while performing experiments.

I have witnessed the students using both of these technologies to their advantage in the classroom. Though technology is beginning to be integrated into the classroom, there are still some major issues that need to be addressed. There are still a large percentage of teachers not making an attempt to integrate the technology into the classroom. Part of the problem results from the lack of funding for software needed to integrate the technology into the classroom. The other problem is the teacher not understanding how to use the technology, thus resulting in the lack of knowledge on how to integrate the technology into his curriculum.

The final problem with the technology in the classroom is the lack of technical support. As a former student at Glasgow High School and part of the current technology support team for the Christina School District, I can see that there are many machines that need repair. The two and a half employees contracted/employed by the district cannot keep up with the number of repairs needed in our schools.

The idleness of the computers are due to the lack of response time for repair. This discourages teachers from trying to integrate technology into their classrooms. I believe added technical support and training for the teachers will increase the percentage of teachers integrating technology into the classroom. I believe these two things will increase technology usage in the classroom.

I would like to thank you for the chance to speak before you today.

Chairman Castle. Thank you very much Mr. Rivera, we appreciate you being here today. We hope you didn't have to miss too much of school being here. It is always a concern with students, but we do appreciate you being here today.

[The statement of Mr. Rivera follows:]

WRITTEN STATEMENT OF MR. RODNEY RIVERA, FORMER STUDENT, GLASGOW HIGH SCHOOL, STUDENT, UNIVERSITY OF DELAWARE, BEAR, DELAWARE – SEE APPENDIX I

Chairman Castle. And our final witness, again, the cleanup hitter on this crowd, is a young man who I know has a great deal of knowledge about computers, because I have spoken about it before and saw him in action. We look forward to hearing from Mr. Schonbach.

STATEMENT OF MR. MARK SCHONBACH, STUDENT, THE CHARTER SCHOOL OF WILMINGTON, WILMINGTON, DELAWARE

Mr. Schonbach. Good afternoon, Mr. Chairman, Member of the Subcommittee. Thank you for this opportunity to speak before you today. My name is Mark Schonbach and I am a Junior at the Charter School of Wilmington here in Delaware. Charter was founded in 1996 as a math, science, and technical-based charter school. I began attending the schools as a Freshman at that time.

Over the past 2-1/2 years, I have benefited tremendously from the use of technology in the classroom and at the school. I have come here to describe some of these benefits and to make some recommendations for expanding access to technology in the classroom.

Starting from my very first tour of the school, I knew that Charter was different from any school I had seen. There were computers everywhere and TVs and laser disks and calculators. Although all of this technology is not absolutely essential, it certainly does make learning easier, faster, and more fun. Take, for example, in Calculus class, the teacher asked us to plot a graph, we all pull out our graphing calculators, which can be leased from the school at very little cost, and obtain an accurate representation of the intended graph. Now, we could do this manually on graph paper, but it takes away valuable instruction time and could possibly be inaccurate.

Another example is in Chemistry class, the teacher is talking about bonding shapes. Everyone can look at the pictures in the book for hours and still not understand what the shapes are and what they mean. However, she turns on the laser disk and it shows all of the different animated shapes to demonstrate their dimensions. One could never get that from a textbook.

My third example comes from the computer lab. As assistant web master of our school's web page club, I am able to use our school's modern computers to add to and update our school's site. Students, parents, faculty, and community members all visit the site to keep up on school news, information about courses and activities, and even post messages to and from each other. Often as the web master and I are updating the site after school in the computer lab, we have the opportunity to assist students using the computers to research topics for their school work.

Now, I have several recommendations as to how we can improve access to technology. First, I would like to see every student have his or her own computer, preferably a laptop. There were some concerns expressed before about how these computers can be prevented from being stolen, but as I was speaking with the President of the school, Mr. Russo, this morning, he indicated that was not the primary concern, but damage possibly was.

Now, there are some pretty rugged laptops out there. I have to say that could be possibly investigated to alleviate this concern. Also, using this laptop, which can be transported to home, to school, on vacation with the student, and so on, we need to purchase textbooks on CDs or DVDs. These textbooks cannot only contain the entire text of a textbook, but also all of the multimedia functions previously described such as audio, video, laboratory investigations, and so on.

One other thing that we need to mention is that the teachers need to be trained. We have plenty of computers in our school. But from personal experiences, I, with a couple of friends, have hosted several after-school seminars for teachers on the use of technology in the Internet. These teachers really don't know how to use it, and we need to really concentrate on how to train them.

And my last recommendation as both a cost-saving and effectiveness measure is the use of open-source software such as the operating system Linux. Linux, which is based on UNIX, is an alternative to Windows that will run on machines with Intel processors. It has many software applications. It is powerful, very secure, and has many knowledgable people to offer support, and it is free. Yep, it is free. Not only is it free, most applications for it are free, requiring only a simple download.

I ask you to consider my recommendations as I feel that they will benefit many future students all across the country. I want to thank you for allowing me to speak today. I hope my experiences and recommendations will be beneficial to you and your reconsideration. I would be happy to answer any questions that you may have on this subject. Thank you.

[The statement of Mr. Schonbach follows:]

WRITTEN STATEMENT OF MR. MARK SCHONBACH, STUDENT, THE CHARTER SCHOOL OF WILMINGTON, WILMINGTON, DELAWARE – SEE APPENDIX J

Chairman Castle. Well, thank you very much, Mark. We appreciate your being here and your testimony. And we look forward to asking you questions.

I don't know about our technology on this -- we are losing the kids in Newark anyhow, as they go to any of their of classes. I wanted to ask if any one of them wanted to make a comment. Is there anyone down there who can hear us that would like to say what we should be doing in Congress? Do we have a volunteer?

Student. We wanted to make some points in regard to some websites. I will sit down. We heard people make some comment earlier about how websites can be used to access grades: There are some schools that are wonderful examples of that, they include Carmel website in California and Baldwin High website in Georgia. I learned some information about that. After researching this program called ISIS, it is a company that costs about $3,000 to install on our systems here where the parents can get on with a password. On the Internet, they can access grades and attendance with the previous classes so they can know exactly when the person skipped class, for example. And you get the profile of every student, all kinds of different information.

Chairman Castle. Let me ask you a question, is that something that a majority of the students at Newark High School would vote to have happen, to have their parents have that kind of access or not? I am just sort of kidding when I say that.

That is actually very interesting, any other comments you all want to make? You have been listening in quite a while.

Let us let this gentleman speak, and we will come back to our witnesses here.

Student. I was wondering if there was going to be any effort to give students home access to UDLib/SEARCH as opposed to only in-school access. It is a useful tool for research papers and other such topics.

Chairman Castle. We are going to have somebody who really knows the answer to this question answer it for you.

Audience Member. The access at home is really dependent upon the State network. We have been talking recently to Peter Lavina who is the Director of Telecommunications. And I think they are working hard at trying to come up with a way to provide home access, but it is really an expansion of the entire State network. And so that is really not so much dependent upon UDLib/SEARCH but as the State network expands.

Chairman Castle. Okay. One more, and we will have to make this the final statement from Newark.

Student. This will be very quick. One thing I would like to see happen with Federal monies is I think in too many cases there are too many strings to just buy hardware, and we need to have more software. And we also need to have more maintenance agreements for the hardware running. I think this is something that not too many people understand.

Chairman Castle. That is helpful for us here, this is what we are here for. This is sort of new to us, too, as we try to find our way amongst the things we should be doing. We appreciate all of your comments. We appreciate all of you sitting in too. You know when you are not live, it is not quite the same, but you have done a good job, and you have helped us with your comments. And we do appreciate that.

Let us go to questions of the witnesses. I want to start, Sallie, with you. And that is, listening to your testimony, you sound as if you were a person who was not that computer literate and then you got a computer at home, learned a little bit in school, and then you finally went to college and learned something about computers.

Ms. Reissman. Right.

Chairman Castle. What about the other teachers, where are they with respect to their computer knowledge and base as compared to you? And is that a problem in terms of the use of computers in classrooms?

Ms. Reissman. Yes. I would say in my school there is probably three other teachers that feel comfortable with a computer. Now, they use the computers, but a lot of times they will_we have a lab tech in the computer lab that will help. She actually teaches a lesson to the children during their computer time. And so they will just let her teach a lesson. Where the school I was in last year, at Lancaster, the teachers came in and taught the lesson.

And so what happened is the lab tech would teach the lesson, the teachers would even step away further from stepping up to the computer.

Chairman Castle. So what Mark has said here is correct?

Ms. Reissman. Oh, yes.

Chairman Castle. There are many, many teachers who really are not up to speed?

Ms. Reissman. Too many.

Chairman Castle. You talk about scholarships at Wilmington College, that was two students I recall per year or something of that nature. Are there students who try to bring the teachers up to significant speed so they can work with the kids on the computers, and is this necessary if they do not exist?

Ms. Reissman. If who does?

Chairman Castle. Are there programs in place in your school district through Delaware, or whatever, to bring the teachers up to speed or up to the ability of being able to really utilize the computers and technology and their ability to teach the students?

Ms. Reissman. Well, there are, like with the teacher-center type workshops where it doesn't cost anything to go to a workshop on say Power Point or different programs like that. There aren't enough. There is plenty you can pay for in the university, Del Tech, and Wilmington College. The thing I would like to see is more in-service. Right now there has been so much with the curriculum and accountability and things like that, that sometimes the technology goes by the wayside. So a lot of the teachers have to do it on their own because of their interests. But it is not mandatory.

Chairman Castle. So there is still a deficiency there, and it is still something we have to look at. And it is not mandatory at this point?

Ms. Reissman. Definitely.

Chairman Castle. Okay. Let me ask you a question about the University of Delaware. And I imagine it is typical, maybe it is a little more technically-oriented than some schools. Do you feel that they are up to speed in the terms of the use or availability of computers and what is happening there? I am trying to get a look at our college and university levels, as opposed to anything that happened at Glasgow or in our high schools like that?

Mr. Rivera. I do believe they are up to par. Their computer is accessible at any point on campus. There are many labs around that anyone can use up to 12:00, 1:00 o'clock at night, and they open 8:00 in the morning. So accessibility is there. Each dorm room is wired so that they can connect to the Internet if they have a computer.

Chairman Castle. So the colleges are making a pretty substantial commitment to all of this based on what you have seen?

Mr. Rivera. Yes.

Chairman Castle. At least the college you are going to.

Mark, let me ask you a question. Let me tell you about Ms. Buckles, which I talked about before. Dale may have told me about it, but she taught me diagramming in 7th grade. I must say when I was in 7th grade, I wasn't that pleased with Ms. Buckles. She scared the devil out of me, and I wasn't sure I was going to make it through that particular grade. But I actually still remember how to diagram a little bit. There are a lot of things I don't remember at all. She was a tough teacher.

She would go to the chalkboard and she would mark things up, and you learned it. If you didn't learn it, you stayed after school and learned it. And at some point she came across. This is back a few years ago, and she didn't have a computer and probably didn't know anything about computers at that point.

My belief is that there are teachers who can teach without technology, and perhaps it is not necessary to have every teacher well versed in technology. And you are absolutely right, I am sure there are a lot of teachers who you and others could, and certainly Rodney could, teach a lot to about the use of technology in computers.

But from your educational experiences, would you say that there are teachers who perhaps can do a good job and that the technology is not absolutely essential for each and every teacher and every course that you take.

Mr. Schonbach. Absolutely. I would say probably 4 out of the 7 teachers I have don't use technology on a regular basis. I mean especially in -- I don't want to put these down at all -- but especially in like Humanities courses where it is mainly, like in history course where you are reading out of a textbook, like watching movies or whatever, it helps, but it is not absolutely essential. And in English courses, again, it is not essential.

But then there is the obvious like Computer Science courses where it is pretty much essential, unless you are talking about just general structure rather than actual programming. And definitely in Math courses, it helps. And in Science courses, like laboratory sciences like Chemistry and Physics, it is definitely an asset.

Chairman Castle. Actually, you are making an interesting point. I imagine we can get some agreement, if we talk to everybody in the whole room and that is everybody, and that is depending on which subject matter you are talking about, the use of computers may be a heck of a lot more important in one subject than in another. I mean that is something actually we should be paying a little more attention to. Mr. Ammann, you said something that caught my attention that I wanted to go over with you and that was -- you mentioned student achievement, measurable student achievement. That is very interesting to me.

Can you either reiterate that or expand on it a little bit? Are you suggesting that you have looked at measurable standards by the use of computer in terms of how students are doing? Are there other variables that really can't be stated yet? Because I worry we are doing all of this and we come to the end and we find, oh, yeah, we have wired all the rooms, we put computers in and we sent our teachers to college to learn about computers, but it didn't really make any difference in terms of students' achievement.

And that concerns us all, frankly in Washington. We put together these programs, and we are not sure in the long run if they are really working in terms of helping our students along. And I would be interested in any comments you have about that subject.

Mr. Ammann. As I said, it is a yearly evaluation we do on pre- and post-testing to these students and compared their schools to National averages. And the theory being that they should stay in the same relation to their peers without any interventions. We have 36 schools now around the State, and this would be the only program that is consistent among all of those schools.

So while you can't say it is the only thing that is attributing that 15 percent increase or that 15 percentile rise, it is something that definitely had an impact on that. This year, we are looking more closely at what the factors are to make this program so successful, whether it is the home component or the software in the classroom and things like that.

Chairman Castle. Good, interesting. Mr. Kildee.

Mr. Kildee. Thank you, Mr. Chairman. I, too, taught diagramming, Mr. Chairman. However, I am not old enough to be your teacher.

Chairman Castle. Even without computers.

Mr. Kildee. As a matter of fact, in my final examinations for my advanced class, I would give a Hemingway sentence and a Dostoyevsky sentence and see if my students could diagram those sentences. Even today, with my staff -- never work for a former Latin teacher -- I will send a letter back to a staff member and say parallel thought demands parallel construction. Often they don't have any idea what I am talking about.

But let me ask this question, in directing our resources in technology, what should the balance be between additional equipment and professional development? Let us go to the professionals and then to the students and see if they can try to answer that.

We have Federal resources and we are trying to improve technology, and there are two ways of improving it, through equipment and professional development. If you can talk about the relationship between the two, what should the balance be?

Ms. Reissman. Well, I don't know how you would do it other than 50/50, only because the teacher_what will happen is with the parents, the children that are growing up with computers now will be the teachers of the future. And they will have that, part of the computers as part of their life. And it will be so much easier for them to integrate anything of computers with the curriculum.

But at the moment, for right now, we definitely need to have the teachers taught how to use the computer in the classroom properly and to integrate the curriculum with this tool. But you still have all of these children like my daughter, for instance, who is in 5th grade, who can create a Web page like that. And so she needs to have the access in school, as these gentlemen have, to become more productive students.

Mr. Kildee. Mr. Ammann.

Mr. Ammann. I think in the most ideal setting, technology as seamless and transparent as possible and just funding hardware it is a tool and it is a special thing. It is now part of the daily, just like paper, pencils and pens. So I think that what we do whenever we buy hardware is we make sure we purchase training and staff development to go along with it so we can assure that the teachers will use it. We get training for base textbooks; we make sure we have training for the technology also.

Chairman Castle. Mr. Rivera.

Mr. Rivera. I would have to agree with both of them. For now I believe that you need an equal balance of both, but I believe later on we won't need as much training as we do right now.

Mr. Kildee. Mr. Schonbach.

Mr. Schonbach. I am going to have to be the low dissenter. I think what we need more of is a two-term solution. Right now we have all the infrastructure; we have the hardware being purchased and donated. What we need to concentrate on right now is the training. And then as we get more training in to match the hardware, then we can take it down to a 50/50 mix.

Mr. Kildee. If I may ask another question, Mr. Chairman, it is kind of a follow-through on your question to Mr. Rivera. How does the use of technology in high school compare to its use in college?

Mr. Rivera. Currently in college, there is more use of the technologies. It is better integrated into the college courses than it is in the high school courses right now. Most of my classes at some point do use the computers, my Math class, my Physics class. In college right now, we use the computers on a frequent basis. We have labs too that are done with the computers. Whereas in the high school, it is not mandatory that we have to type up a lab or use the computers to evaluate functions and things like that.

Chairman Castle. Is that because of better professional development or because of better equipment at the university level?

Mr. Rivera. I believe it is both.

Mr. Kildee. Both. May I ask one more question? Mr. Schonbach, you attend a charter school that specializes in science and technology. You really have significant contact with cutting edge technology and I assume professionally trained teachers in technology. How does that compare to your friends who attend other schools, other types of schools.

Mr. Schonbach. It really feels quite the same actually. Yeah, we have the more emphasis on the math and science, but then you look at Cab Calloway, which is a different school, it is out of space and down in our basement. And we actually share classes with them. We give them_if they have a couple of students that need the advance, we let them come up into our classes. If they have a couple of students they want_take a dance class or an arts class, we go down there and take them. So it is really, you know, we give and we take and it is all pretty much the same.

Mr. Kildee. Would your building have more equipment? You share a building with another non-charter school?

Mr. Schonbach. Right.

Mr. Kildee. Would your building have more equipment than other schools in your district or about the same?

Mr. Schonbach. It is about the same. I mean we have the standard equipment that everyone has. I mean we have allocated_we are sponsored by six local corporations and they give us some funds which we have allocated for technology and other things that a normal public school may have or may not have or may be allocated through the district, which we don't have. So I guess it is all really relative on what the district or individual school has allocated their funds for.

Mr. Kildee. Thank you very much. Thank you Mr. Chairman, and I thank the panel.

Chairman Castle. Let me ask a quick follow-up question, what Mr. Rivera said about the University of Delaware is interesting. They are well integrated in terms of the use of technology and people's expertise in it.

Mark, when you go to choose a college, is that something you will look at or maybe you are looking at Computer Science as a study in addition to that; I don't know, but is that -- I mean will you fundamentally ask those questions or maybe you already have, in determining what the colleges have?

Mr. Schonbach. Yeah, actually that is one of the things I have been investigating in doing my research. Several of the college guides I have actually rank, actually have listings of schools based on, you know, how many Internet terminals and what percentage of the students and faculty use computers. And that is definitely going to be an integral part of my decision.

Chairman Castle. So it is a factor in college decisions at least in your case and probably in the case of a number of other students too.

Mr. Schonbach. Absolutely.

Chairman Castle. And you probably run into the same thing with the kids you met?

Mr. Rivera. Yes.

Chairman Castle. Let me thank this panel very, very much.

I don't mean to embarrass anybody, but we have a student from Christina High School here, and we gave the students from Newark time to say anything. I don't know if you want to say anything or not. She is indicating no.

And we have some Glasgow students here, I understand. Can you put your hands up and let us see -- you have been coming out, I guess, between classes when you get your time to get here. We appreciate your being here. I know you didn't hear a lot of all that went on.

We also appreciate the use of your library and the fact -- and Rodney here, by the way, is a Glasgow graduate -- that you seem to be up to speed from a technical point of view which we appreciate.

And with that, I think we are ready to bring the hearing to a close. But let me turn to Mr. Kildee for any final comments or anything he wishes to say.

Mr. Kildee. Again I want to thank all the panels for their testimony today. This panel was particularly good. I always like to listen to the customers, the students, they are the ones who education is all about. And both of you have done an excellent job in helping us understand what our role in Washington should be.

I want to also thank Governor Castle. As I said, he is not only a personal friend, but a great, outstanding Member of Congress. If I can't be the Chairman, there is no better Chairman than Governor Castle. I don't travel a lot in my congressional career, but when Governor Castle asked me to come to Delaware for this hearing, there is no way I could say no to him.

Thank you, Governor.

Chairman Castle. Let me thank Mr. Kildee in turn. As I said at the beginning, I think all who have been here understand why I said it, but Mr. Kildee's background in education and his experience on this Committee over many, many years is an indication of his belief in our young people and in the importance of education in terms of giving everybody an opportunity.

We happen to share that belief. If you weren't here earlier, you might not have heard he has not missed a Congress since 1984.

Mr. Kildee. 1985.

Chairman Castle. 1986, which is the longest running record of any Member of Congress. I would like to state for the record that I have over a 99 percent voting record, but I am not 100 percent for a small variety of reasons, but major reasons, I couldn't make 100 percent.

In any event, we appreciate him being here, and we also appreciate the staff people coming from Washington to join us and help coordinate this. Let me again emphasize the importance of hearings like this. This is not just those of us who are present. This testimony is analyzed by staff. It is sent out to the various Members and to their staffs who will also look at it.

We are generalists, I think it is fair to say, we are going to be worried about Kosovo in another couple of hours probably. We are going to worry about the budget tomorrow. We are going to worry about an environmental bill the day after, whatever it may be, and so we can't always focus on just education or just technology. So it is very important for us to have those of you who look at this in a more focused way, come in and share your information with us.

I am proud of everybody from Delaware today. I think you have added a lot to our Committee and to the future. Tom Sloan is probably dieing to have me repeat that; I think he has a program outside for us to look at, which he mentioned earlier in his testimony. So I hope everybody will have a chance to do that.

[The statement of Dr. Stack follows:]

WRITTEN STATEMENT OF DR. WESNER STACK, SUPERVISOR OF

Chairman Castle. Again, to everybody who joined us by video, to all of you who are able to be here as witnesses, and, particularly, to those who participated as those testifying before us, we are very appreciative of that. And with that, the Committee stands adjourned. Thank you.

[Whereupon, at 12:45 p.m., the Subcommittee was adjourned.]

APPENDIX A – WRITTEN OPENING STATEMENT OF CHAIRMAN MICHAEL CASTLE, SUBCOMMITTEE ON EARLY CHILDHOOD, YOUTH AND FAMILIES, COMMITTEE ON EDUCATION AND THE WORKFORCE, U.S. HOUSE OF REPRESENTATIVES, WASHINGTON, DC

OPENING STATEMENT BY CHAIRMAN MIKE CASTLE
SUBCOMMITTEE ON EARLY CHILDHOOD, YOUTH AND FAMILIES
HEARING ON EDUCATION TECHNOLOGY IN DELAWARE
NEWARK, DELAWARE
APRIL 12, 1999

Good Morning. I would like to take this opportunity to welcome those of you attending this morning's hearing to discuss an issue that is very important to all of us - the education of our children, and how technology can be used to expand educational opportunities and improve student achievement for all students.

First, I would like to express my appreciation to the Ranking Democrat Member of the Subcommittee on Early Childhood, Youth and Families, Rep. Dale Kildee, who has come all the way from Michigan to join us this morning to see the exciting things that Delaware is doing in the area of education technology. I would also like to take this opportunity to thank the administration, teachers, and students of Glasgow High School, and the Christina School district for hosting this morning's hearing.

Next I want to welcome Governor Tom Carper, and our other distinguished witnesses, who will provide us with testimony about how Delaware is incorporating technology into its education reform efforts and into the classroom. It has been through Governor Carper's leadership that Delaware has become one of the first States in the Nation to wire all of its schools to the Internet - and to put technology at the heart of the State's reform efforts.
I look forward to receiving your testimony, and that of all of our other distinguished witnesses, who will tell us of innovative programs and strategies that will lead our schools into the next millenium.

This morning's hearing is one in a series of hearings that our Committee will hold in preparation for reauthorization of the Elementary and Secondary Education Act - better known as ESEA. We hope to come away from this morning's hearing with not only an understanding of how Delaware is using technology to improve education, but also with recommendations on how we, at the national level, can better assist States and local communities to use technology in improving America's schools.

In recent years, funding for education technology programs has dramatically increased at the national level. In fact, Federal funding for education technology programs authorized under title III of ESEA alone has increased from $52.6 million in FY 1995 to $698 million in FY 1999. However as part of that growing support, so many programs have sprung up that we are faced with a situation where there is little to no coordination among the programs at the federal level. This forces schools and administrators to waste hours of time and money (in some cases to hire consultants) to fill out applications for federal education technology funds.

The U.S. General Accounting Office (GAO) has reported that there are over 27 federal programs -- administered by 5 different federal agencies -- which provide funding for education technology to K-12 schools and to libraries. Federal assistance ranges from grants to States and local school districts for education technology authorized under ESEA -- to tax incentives for corporate donations of computer technology for elementary and secondary education -- to establishment of the E-rate.

The primary education technology programs that are under the jurisdiction of our Committee, are those authorized in title III of ESEA. However, if we are to be successful in providing the kind of assistance to States and local school districts that will be necessary for the continued successful integration of technology into the classroom, we must look beyond just the programs authorized under the technology title of ESEA.

We must find a way to consolidate, or at the very least, allow States and local school districts to integrate the different funding streams that are available for technology in ways that allow for a truly coordinated and cohesive education technology effort. Support for education technology must lead to increased academic performance - not just the presence of new computers in the classroom or access to the Internet.

Recent studies have found that education technology has a positive impact on student achievement, but only when used by well-trained teachers. In fact, studies on the use of technology in the classroom stress the need for: improved teacher training; the integration of technology into the education process - including curriculum development that effectively integrates technology; adequate access to technology; and careful planning.

While we are still in the process of determining what exactly we will do in the area of education technology as part of our consideration of the ESEA legislation this Congress, you can expect that technology will be a major focus of any reform. The question is, what is the best way to support successful technology efforts at the State and local level? It is essential that any reforms in federal education legislation get funding into the hands of local educators in the most efficient manner, so that they can determine the priorities and needs of their students.

I invite you to work with us in development of the legislation to reauthorize ESEA, and particularly on that portion of the legislation dealing with education technology. I look forward to your testimony, I know that it will be most helpful to us in our efforts.

APPENDIX B -- WRITTEN STATEMENT OF DR. ORLANDO GEORGE, JR., PRESIDENT, DELAWARE TECHNICAL AND COMMUNITY COLLEGE, DOVER, DELAWARE

Statement of Dr. Orlando J. George, Jr.
President
Delaware Technical & Community College
Dover, Delaware 19903

DELAWARE
TECH
Georgetown ■ Dover ■ Stanton ■ Wilmington

Subcommittee on Early Childhood, Youth and Families
Committee on Education and the Workforce
United States House of Representatives

Hearing on the Reauthorization of the
Elementary and Secondary Education Act
April 12, 1999 at 10:00 a.m.

Statement of Dr. Orlando J. George, Jr.

President
Delaware Technical & Community College
Dover, Delaware 19903

DELAWARE
TECH

Subcommittee on Early Childhood, Youth and Families
Committee on Education and the Workforce
United States House of Representatives

Hearing on the Reauthorization of the
Elementary and Secondary Education Act
April 12, 1999 at 10:00 a.m.

Thank you, Mr. Chairman and members of the Committee. I am pleased to appear before you to offer my testimony regarding the reauthorization of the Elementary and Secondary Education Act.

This morning my testimony will focus on the benefits of collaborative partnerships in educational technology and the role that the community college can play as a facilitator in the development of a technology-based learning community.

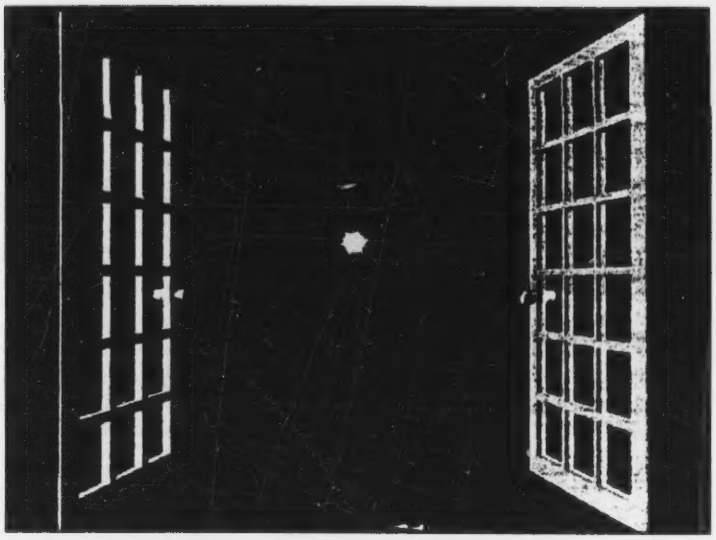
Technology has a profound impact
on the business community,
the non-profit sector,
government agencies, and our
educational institutions.

The business of education is about communicating information. All the software, hardware, and infrastructure we have come to call "educational technology" has the potential of really making a difference in student learning.

But, how do we make this potential a reality?

How can community resources be leveraged to address the challenge of the ever-changing technology?

And most importantly, how can we leverage our resources to deliver technology education in a cost effective manner?



As you know, many different groups of individuals come through the doors of our community colleges.

Delaware Tech Students

K-12 Teachers

Business Leaders

Delaware Tech Faculty

K-12 Students

Governor and Legislature

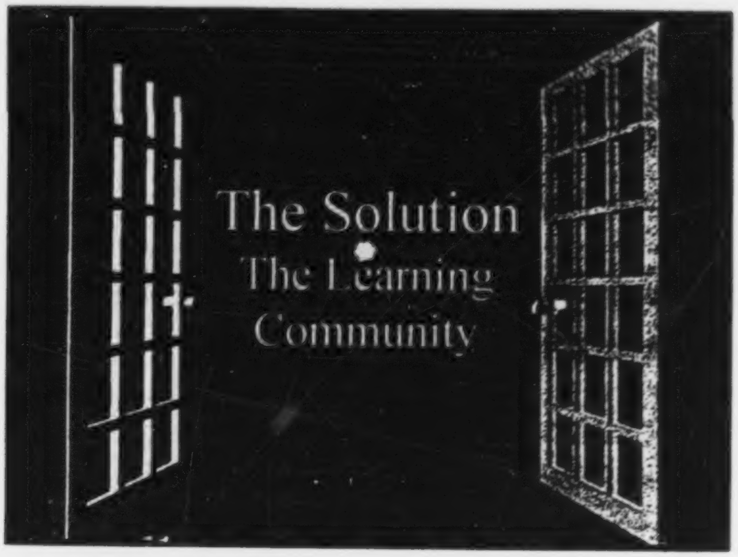
School Superintendents

In fulfilling our mission as a community college we are cognizant of meeting the needs of many diverse groups.

- •Delaware Tech students who need up to date technology skill instruction delivered anytime, anyplace
- •Delaware Tech faculty who want to use technology enhanced learning to improve educational effectiveness
- •The Business community who needs an educated workforce that is technology competent
- •The Governor and Legislature who have invested $30 million in wiring infrastructure in Delaware's public schools
- •The Superintendents who are under public scrutiny for accountability
- •The K-12 teachers who are charged with delivering instruction which improves student outcomes
- •The K-12 students who are a technology savvy group

At Delaware Tech we looked for ways to develop a technology based learning community, to meet the needs of these 7 stakeholder groups.

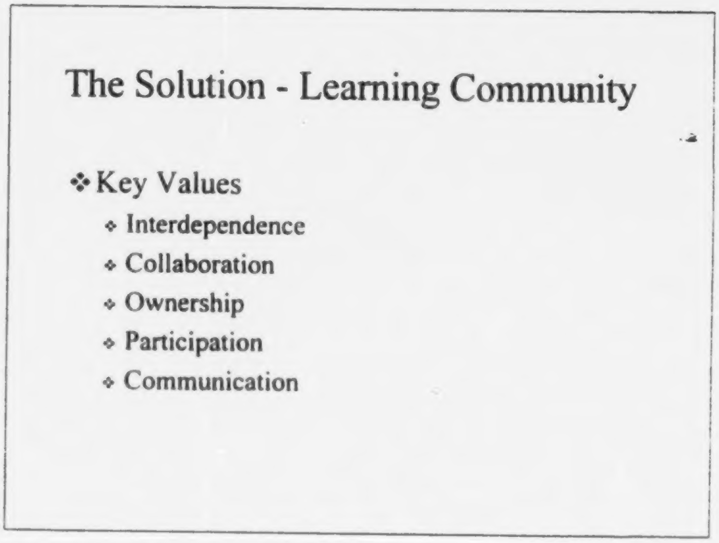
We recognized that a plan which would meet the needs of our students and our faculty may be applicable to a larger group of educators and, in turn, meet the needs of a broader community. We wanted to take a leadership role in facilitating a collaborative partnership for technology training.



The Solution

The Learning Community

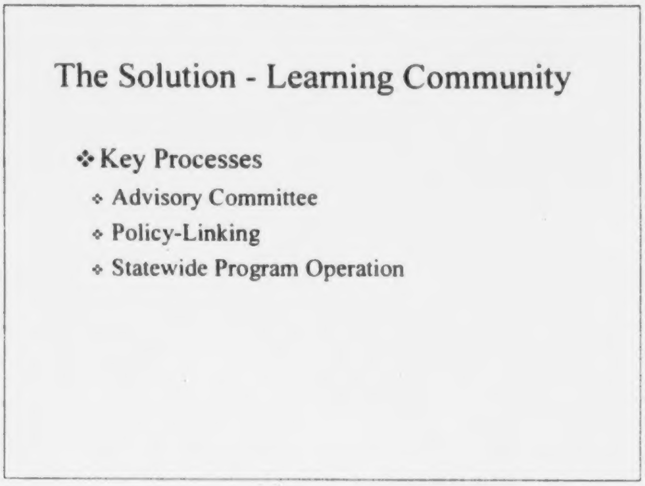
What resulted from our efforts in Delaware was a statewide learning community in educational technology.



The Solution - Learning Community

- Key Values
  - Interdependence
  - Collaboration
  - Ownership
  - Participation
  - Communication

Let me share with you some key values of the technology based learning community that we have created in Delaware.



The Solution - Learning Community

- Key Processes
  - Advisory Committee
  - Policy-Linking
  - Statewide Program Operation

Advisory Committee

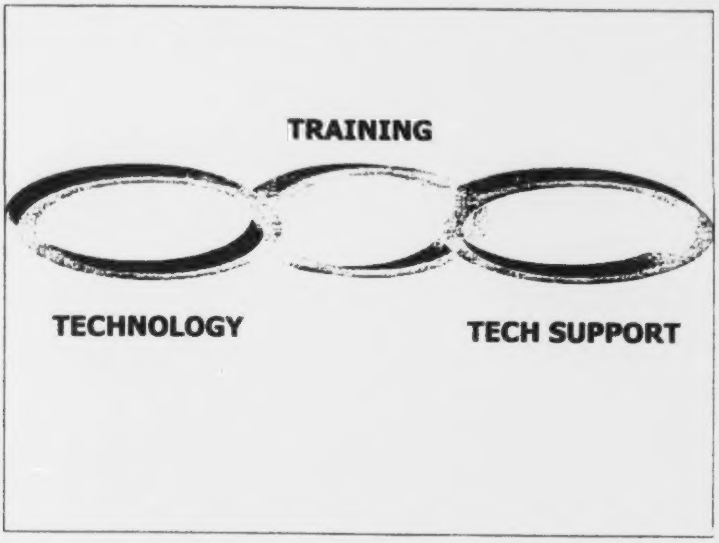
The key to the program's success was an advisory board comprised of representatives from the school districts who worked with our faculty to define the competencies in educational technology, that are needed by all teachers.

Policy-Linking

The Secretary of Education approved Educational Technology courses for K-12 teacher lane advancement. In addition, legislative approval was received for state tuition reimbursement for teachers in the program.

Statewide Programs Operation

Our Ed Tech Program is offered at all four campus locations, within easy driving distance for all Delaware teachers. Any campus can contract with a local school district to train groups of teachers at the campus or at the school site.



TRAINING

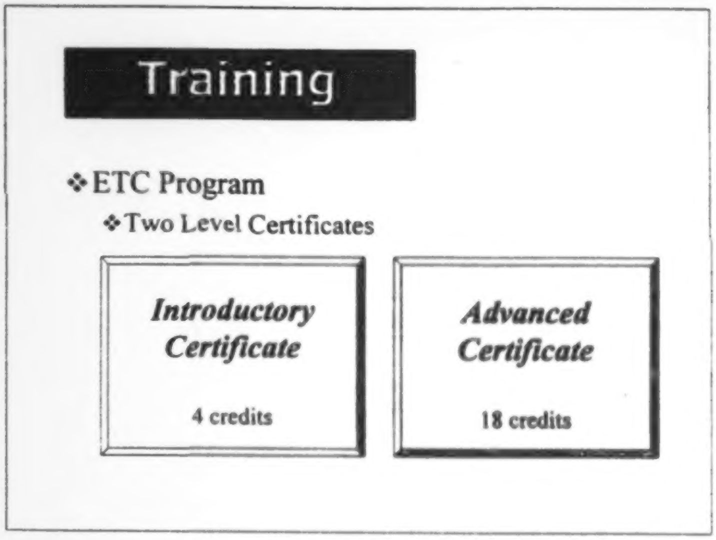
TECHNOLOGY

TECH SUPPORT

Everyone recognizes the importance of hardware, software, and infrastructure.

And it's becoming more evident any effort in educational technology requires competent technical support staff.

The missing link here it training - technology training for teachers. In fact, the Delaware Business/Public Education Council issued a report last year, called the Missing Link, citing the need for training.



Training

- ETC Program
  - Two Level Certificates

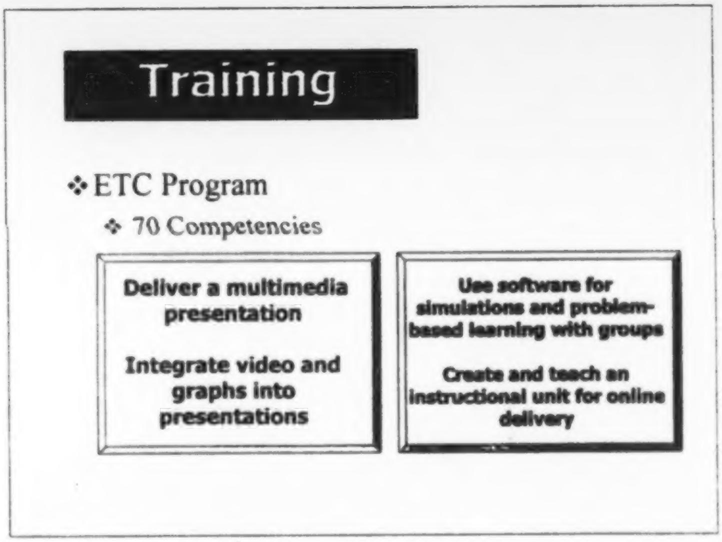
Introductory Certificate 4 credits	***Advanced Certificate*** 18 credits

Delaware Tech has created the Educational Technology Certificate Programs for faculty development.

The program has 2 levels:

A 4 credit Introductory Certificate for those with limited knowledge of technology.

An 18 credit Advanced Certificate which progressively develops the ability to integrate technology into teaching and learning.



Training

- ETC Program
  - 70 Competencies

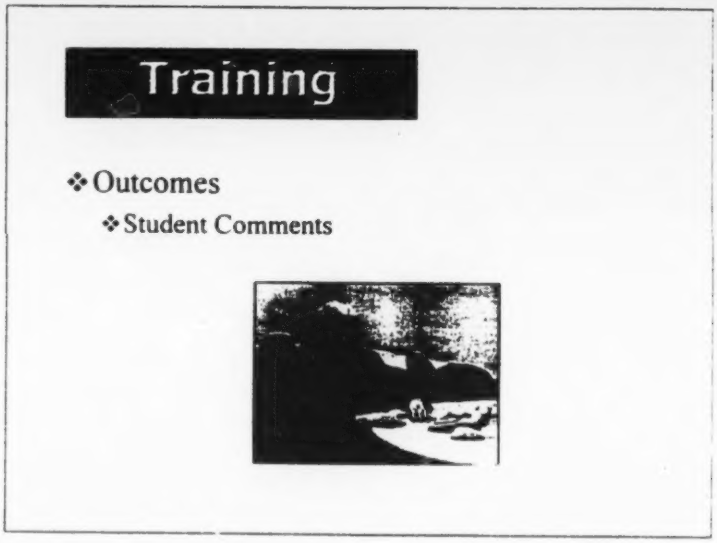
Deliver a multimedia presentation

Integrate video and graphs into presentations

Use software for simulations and problem-based learning with groups

Create and teach an instructional unit for online delivery

The Program was developed from the 70 competencies identified by the advisory committee, some of which are listed here.



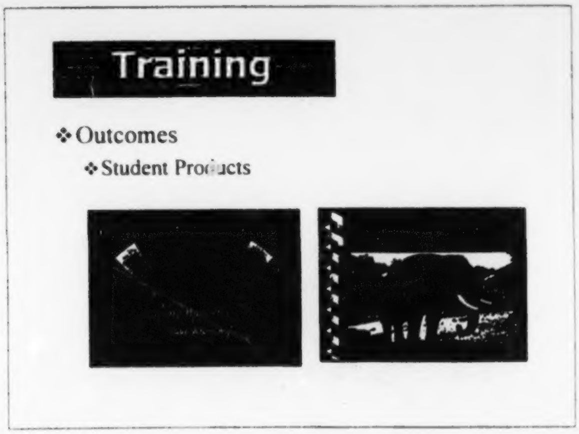
Training

- ❖ Outcomes
  - ❖ Student Comments

Since the program began last summer, we have enrolled 400 participants. The response has been overwhelmingly positive.

Here's what one ETC student has to say.

"The ETC program and instructors have renewed my energy and spirit as a teacher! These classes are relevant and applicable to educators who want the very best technology education possible to enhance their curriculum development and teaching skills."



Training

- Outcomes
  - Student Products

What better way to show the impact of the program than to show student products!

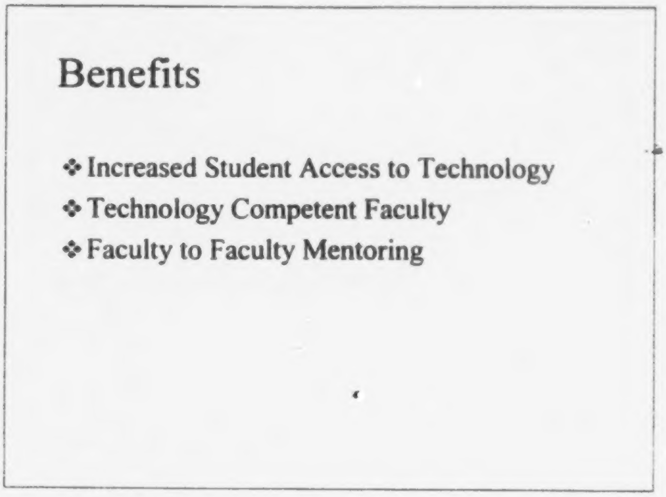
In the segments of these 2 PowerPoint projects you'll see, that regardless of grade level, faculty can learn technology side by side. These teachers have demonstrated their competencies by creating applications for very different audiences.

Example 1

Judie Wharton used technology to guide special education elementary students in a science experiment from caterpillars to butterflies. She demonstrated her word processing skills by creating homework sheets for the experiment.

Example 2

At the ninth grade level, Linda George's presentation facilitates her students' social studies research project about Africa. The assignment objectives and expectations are clearly outlined for the students in a visually appealing format.



Benefits

- ❖ Increased Student Access to Technology
- ❖ Technology Competent Faculty
- ❖ Faculty to Faculty Mentoring

The following benefits have been realized within the learning community.

First and foremost we have increased student access to technology, enabling them to develop skills required in today's workplace.

Through a core of technology competent faculty, we are changing the way instruction is delivered in Delaware.

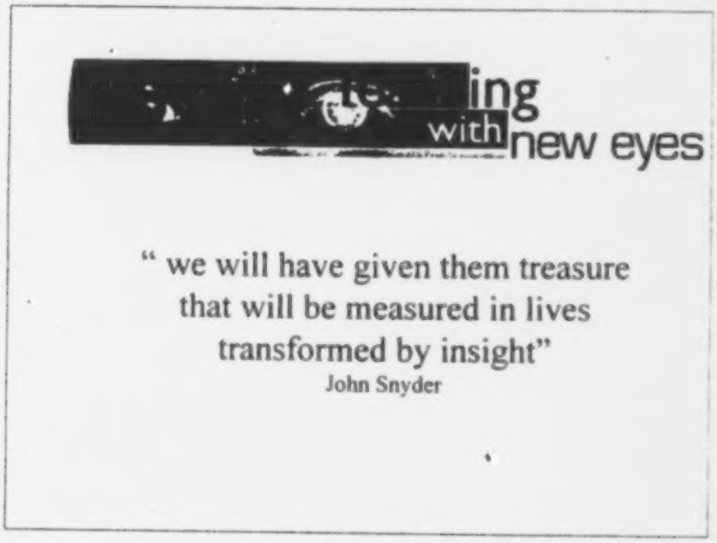
We are helping teachers make effective use of the hardware, software, and the infrastructure. We have watched this core of faculty serve as role models and mentors for their colleagues. One public school teacher, enrolled in the advanced certificate program, was able to convince her entire school to sign up for the introductory certificate. We, in turn, had the flexibility to hire her to team teach the course with one of our instructors. What a powerful message that sent to everyone involved!

Recommendations

- ❖ Financial incentives should be provided for school districts to develop and implement integrated educational technology plans which include the 3 links: Technology, Technical Support, and Training
- ❖ The Act should specify that funding proposals for educational technology training include the community college as a partner

If I could leave you with a message today, it would be the following recommendations listed above

In closing, let us remember that our focus is on students - present and future - who will benefit from the ever changing technology. We must be committed to using technology to improve student learning and we must be committed to the basic tenets of good teaching.


ing
with new eyes

" we will have given them treasure
that will be measured in lives
transformed by insight"
John Snyder

Teaching with technology is like teaching with new eyes.

Envision with me learning environments that use technology to make connections in meaning. Environments that allow our students to really understand, communicate, and apply knowledge.

What will we have given our students if we make these environments a reality?

As John Snyder points out in Teaching With New Eyes,

"we will have given them treasure
that will be measured in lives
transformed by insight"

BIOGRAPHY OF
DR. ORLANDO J. GEORGE, JR.

Orlando J. George, Jr., is the President of Delaware Technical & Community College, a statewide institution of higher education serving over 45,000 students each year. Dr. George began his service at the College in 1969 as a Mathematics Instructor progressing to Mathematics Department Chair, Assistant to the Campus Director, Dean of Instruction, Assistant Campus Director, and Vice President & Campus Director, until being named President in 1995.

Dr. George also served on the Wilmington City Council from 1972-74 and in the Delaware House of Representatives from 1974 to 1995. During his tenure in the House, he held various leadership positions, including Speaker of the House, Chairman of the Joint Finance Committee, and Minority Leader.

Dr. George is an alumnus of the University of Delaware, having received his Bachelor of Arts in Mathematics, Master's in Education, and a Doctorate of Education. In 1988, the University presented Dr. George with its "Distinguished Alumni Award" for outstanding professional accomplishments.

Other honors received by Dr. George include the Amicus Curiae Award from the Superior Court of Delaware; "Distinguished Legislative Service Award" from the Delaware State Bar Association; "Jack D. Graybeal Certificate of Honor" for support of public education from the Northeast Alliance of Ministers; Alpha Beta Gamma College President of the Year 1998, and being listed in Who's Who in America, Who's Who in American Politics, Who's Who in the East, and Who's Who in Emerging Leaders in America.

Dr. George is President of the Board of Directors for Communities in Schools, which is a high school dropout prevention and recovery program. He is a member of the Association of Community College Trustees (ACCT) Northeast Region Awards Committee, Delaware Business Roundtable, Private Industry Council, Business-Public Education Council, Delaware Workforce Development Council, Advisory Board Member for the The Mary Campbell Center, Advisory Committee Member for the Delaware Science Alliance, United Way of Delaware Campaign Cabinet, and the Delaware Council of Presidents. Dr. George is also an Honorary Co-Chair of the Board of Directors of the Delaware Mathematics Coalition and serves on the Board of Directors of the Delaware State Chamber of Commerce, The Partnership, Inc., and Community Colleges for International Development, Inc.

Dr. George and his wife, Linda, reside in Wilmington and are the parents of four daughters.

APPENDIX C -- WRITTEN STATEMENT OF DR. WAYNE HARTSCHUH, EXECUTIVE DIRECTOR, DELAWARE CENTER ON EDUCATIONAL TECHNOLOGY, DOVER, DELAWARE

Testimony to the U.S. Congress, House of Representatives, Subcommittee on Early Childhood, Youth and Families

April 12, 1999

Testimony
by
Dr. Wayne Hartschuh
Executive Director
Delaware Center for Educational Technology
Dover, Delaware 19904

Good morning, Mr. Chairman and members of the Subcommittee. Thank you for inviting me to participate in this hearing on educational technology in Delaware's schools. I am Dr. Wayne Hartschuh, the Executive Director of the Delaware Center for Educational Technology. Let me begin by giving a brief overview of my organization, the Delaware Center for Educational Technology (DCET).

In the spring of 1995, the Delaware Legislature accepted the recommendation of Governor Thomas R. Carper to establish the Delaware Center for Educational Technology. The Center's mission was to create a modern educational technology infrastructure in Delaware's public schools to enable students, through the use of educational technology to meet academic standards set by the State Board of Education and to develop the skills needed by a world-class work force.

As a public education entity in the State of Delaware, working closely with the Department of Education, the Office of Information Services, and the districts, DCET embarked on a three-year project to wire every public school classroom in the state. For the record, we didn't just put a data drop in the classroom. We installed at least one data line, a telephone line, a coaxial cable for video, and two strands of fiber. At this point in time, the project is complete and we are proud to point out that the project was completed on time and within budget. Another point we are proud to make is *Delaware is the first state in the nation to have network access in every public school classroom in the state.*

The reason for installing the infrastructure and wiring every classroom is reflected in the vision statement: *The First State in Education: Every Classroom, Every Teacher, Every Child.* The vision of DCET reflects an absolute commitment to the principle of equity: *ensuring every teacher and child, in each of our public schools and classrooms is provided with an equal opportunity to utilize technology in the educational process.* This vision also reflects the fundamental belief that technology in education is critical to the creation of a competitive 21st century workforce and that a competitive workforce is a major contributing factor to strengthening and maintaining Delaware's economic viability.

The efforts of the Delaware Center for Educational Technology have been recognized nationally, as DCET has received a Computerworld Smithsonian Award for the Classroom Networking Project. The project is part of the 1998 Information Technology Innovation Collection that was formally presented to the Smithsonian Institution last April. A brief description of all the award recipients, including DCET, is on display in the Smithsonian's National Museum of American History.

Although the telecommunications infrastructure is now in place, we have high-speed network connections to every school, we have every classroom wired to the Delaware Education Network, including the Internet, and we've received a very prestigious award, I really don't get too excited about wires in the walls. What I do get excited about are the educational activities that can be enhanced because of the network. The excitement lies within the schools where teachers and students are utilizing the Delaware Education Network and the Internet. In Milford, middle school students are creating a Web site connecting their school with the community and communicating with students from other cities or towns named Milford. In Appoquinimink, teachers and students are participating in a collaborative project on Monarch butterflies. Numerous teachers across the state, from Brandywine in the north to Delmar in the south are creating Web Quests, instructional activities designed as Web pages that allow the students to find and synthesize information on the Internet. In addition, UDLibSearch, a resource provided through the University of Delaware, provides access to online research material to all high schools and middle schools. These activities are directly related to the network and the Internet. I always like to mention that there are equally effective educational technology tools that are not connected to the network, such as, graphing calculators and word processing devices.

In other words, there is more to technology than computers. *I always strive to tell people that we need to match the technology to the situation.* The USDOE has stated we should strive for the ratio of students to computers to be 5:1. The Delaware DOE has stated 5 computers per classroom. Basically, the same with an average class size of 25 students. In many cases, a ratio of 5:1 or 5 computers in a class will suffice especially at the elementary school level. In other cases, rather than computers, we might want to have a classroom set of word processing devices for an English class, or a classroom set of graphing calculators for a math class. More effective technology for the situation at roughly the same cost.

In Delaware, I envision at least one computer in every classroom for, at a minimum, administrative uses of the teacher. This is in support of the DOE

Integrated Pupil Accounting and Curriculum Management initiative that will standardize these administrative functions across the state. The first step is pupil accounting, and we have taken the "we're all in this together" approach. DOE is putting the system in place, DCET is supporting the operation of the system with servers, and the districts are responsible for the end-user computers with the intent being every teacher having access to the system in their classroom.

An excellent decision was made by the State to lay the groundwork for growth by installing and supporting the telecommunications infrastructure to every classroom. Across the state, we are currently addressing that growth and the effective implementation of technology-related activities in the classroom. I am proud to say we are making steady progress forward.

Thank you.

APPENDIX D - WRITTEN STATEMENT OF MR. TOM SLOAN, STATE LIBRARIAN, DELAWARE DIVISION OF LIBRARIES, DOVER, DELAWARE

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DEPARTMENT OF STATE
DIVISION OF LIBRARIES
43 S DUPONT HIGHWAY
DOVER DELAWARE 19901

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FAX (302) 739 - 6787

Statement for the Record and Testimony
of
Tom W. Sloan

on behalf of the
Delaware Division of Libraries

before
the House Subcommittee on Early Childhood, Youth and Families
on
Effective of School Library Media Programs on Learning

April 12, 1999

Good morning and welcome to Delaware and the Glasgow High School Library. I am Tom Sloan, Delaware's State Librarian.

You honor the libraries of this state and nation by selecting a school library as the site of this important hearing on the reauthorization of the Elementary and Secondary Education Act. Your presence recognizes that the school library media center is essential to learning and is the information hub of successful 21st Century schools.

To that end, the reauthorization of ESEA should ensure that students and staff are effective users of ideas and information. It is the school library media program that provides the intellectual and physical access to learning materials in all formats. It is the school library staff that provides instruction to foster literacy and stimulate interest in reading, viewing, and using information. It is the successful school library media

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program that is able to work with teachers, students, and parents to design learning strategies to meet the needs of individual students

ESEA could provide incentives to establish, maintain, and expand school library media programs that improve student achievement as shown through research studies ESEA could assist in providing the funds needed to acquire sufficient school library materials, provide qualified school library media specialists to work with students and teachers, and incorporate new technologies into the curriculum and learning

Why should federal funds be spent to support school library media programs?

Because the quality of school library media programs is critical to student achievement The findings of two major studies conclude that strong library media programs are key predictors of student success

A federally funded study documents the positive impact of school library media programs on academic achievement in 221 Colorado public schools The 1993 Colorado Department of Education study showed that library media expenditures on staff and collections promote student achievement Specifically the study showed that where school libraries are better funded, academic achievement is higher, regardless of schools being located in rich or poor communities and regardless of adults in the community being well or poorly educated The study also found that better funding for school libraries fosters academic achievement by providing students access to more library staff and larger and more varied collections Additionally, students whose library media specialists participate in the instructional process are higher academic achievers The report found that among predictors of academic achievement, the size of the school library media program staff and collection is second only to the absence of at risk conditions.

The second report, titled *The Power of Reading*, reviewed hundreds of research studies conducted in the 19th and 20th centuries that explore the power of free voluntary reading. That is, reading a young person is not assigned to do, but rather chooses to do. The author not only summarized these studies, but when possible, re-analyzed experimental data with current statistical tools to re-check the results of previous studies.

Results show that the amount of free voluntary reading is the best predictor of reading comprehension, vocabulary growth, spelling ability, grammatical usage, and writing style. The results also show that the best ways to promote reading achievement are by creating a print-rich environment, providing large library collections, reading aloud, using sustained silent reading, encouraging readers, promoting positive reading habits, and modeling reading by parents, teachers, and friends.

As these two studies report, a well-funded school library media program is essential for successful teaching and learning outcomes.

Today, library and information technologies are key to providing a successful school library media program. A national model technology initiative is ICONnect. ICONect is sponsored by the American Association of School Librarians and is designed to engage students, school library media staff and teachers in using the Internet.

ICONnect resources help students develop information and visual literacy skills. The project provides school library media specialists and teachers with training in effectively navigating the Internet. ICONnet develops and uses curriculum connections

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for teachers and students. It assists parents in guiding their children to appropriate Internet resources.

ICONnect has attracted private sector support from such information and technology firms as Microsoft Corporation and EBSCO Publishing. This support has allowed the successful demonstration of ICONnect. Additional funding is required to implement ICONnect technology project in schools throughout the nation.

Immediately after this hearing, we invite you to a demonstration on the ICONect project. Allison Kaplan, Coordinator of the School Library Media Specialist Program at the University of Delaware and a member of the national ICONnect Committee, will provide an ICONnect presentation.

In Delaware, a very successful library and information technology project for schools is UD/Lib SEARCH, a joint effort of the University of Delaware Library and the Delaware Department of Education. The UDLib/SEARCH project provides all Delaware public high schools and middle/junior high schools with online access to full text magazines, journals and encyclopedias. The University of Delaware Library negotiates contracts with database vendors, ensuring a very advantageous cost per school ratio. Equally important, University of Delaware Library staff provide training sessions for teachers, school librarians and other school staff on using the online resources.

Following the hearing, Dr. Sandra Millard, an Assistant Director of the University of Delaware Library, and Ms. Suzanne Smith, School Library Media Specialist for Glasgow High School, will provide a demonstration of the UD/Lib SEARCH project.

To conclude, I ask that you reauthorize ESEA to provide targeted incentives to establish, maintain, and expand school library media programs. ESEA could assist in funding school library materials in all types of formats. ESEA could assist in funding qualified school library media specialists to work with students and teachers. ESEA could assist in funding new library technologies that connect the curriculum to the resources needed for learning.

Thomas Jefferson stated in the 19th Century that "A democratic society depends upon an informed and educated citizenry." America's school library media centers are at the forefront of creating literate and informed students. Our school libraries must succeed if we are to meet the needs of a 21st Century democracy.

Thank you for the opportunity to speak on these important matters. Please do join us after the hearing for demonstrations of the ICONnect and UD/Lib SEARCH technology projects.

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High Schools
- Databases
- People
- Schools
- Training
- Other

Middle Schools
- Databases
- People
- Schools
- Training
- Other

[illegible]

[illegible]

UDLib/SEARCH

ONLINE MAGAZINES AND JOURNALS FOR SCHOOLS

A University of Delaware Library/State of Delaware partnership to provide access to online magazines, journals, encyclopedias and training to all Delaware public high schools and middle schools.

The University of Delaware and the State of Delaware have joined together to provide access to networked electronic resources and training for all Delaware public high schools and middle schools through UDLib/SEARCH.

UDLib/SEARCH provides centralized access via the World Wide Web to fulltext online encyclopedias and full text magazines/journals databases. UDLib/SEARCH has been funded for one year beginning July 1, 1998 through June 30, 1999.

The University of Delaware Library has received funding for UDLib/SEARCH from the State of Delaware Department of Education through a special appropriation recommended by Governor Thomas Carper and approved and voted upon on June 30, 1998, by the Delaware General Assembly.

The University of Delaware Library manages UDLib/SEARCH, including negotiating and funding subscriptions and license agreements for UDLib/SEARCH databases for all Delaware public high schools and middle schools and to access via the Web on existing state network. The University of Delaware Library also provides all training related to UDLib/SEARCH databases to school librarians, teachers and administrators in all public Delaware high schools and middle schools. More than 700 teachers were trained last year.

UDLib/SEARCH began on July 1, 1997 with a program designed for public high schools and expands to serve all Delaware public middle schools. All Delaware high schools and middle schools are wired for World Wide Web access via the State of Delaware network managed by the State Office of Information Services Office of Telecommunication.

UDLib/SEARCH substantially enhances student learning by providing basic and current information to assist students and teachers in their research, in activities related to meeting the state Content Standards, in independent learning and in acquiring information literacy skills. It gives students the skills needed for work in an increasingly information-based, technological society and prepares high school students for possible college entry.

APPENDIX E - WRITTEN STATEMENT OF DR. NICHOLAS FISCHER, SUPERINTENDENT OF SCHOOLS, CHRISTINA SCHOOL DISTRICT, NEWARK, DELAWARE

Presentation: U.S. House Sub-Committee on Early Childhood, Youth and
Families, April 12, 1999.

Nicholas A. Fischer, Superintendent, Christina School District

On behalf of the Christina Board of Education, our staff, students, parents and communities, I want to welcome you to Delaware's largest public school district, where we are proud of our diversity, proud of what we have done and what we are doing to improve. We believe that we can and will improve student achievement.

It is fitting that you have come to Glasgow High School, where technology supports instruction and the administration of the school. Federal funds have made a distinctive contribution to science education here through the National Science Foundation's funding of $750,000 for the Mesocosm project in environmental studies. Federal funds of $247,500 from a Goals 2000 Technology Challenge Grant have also been extremely helpful by supporting efforts to improve instruction through planning and monitoring student performance at Brader Elementary School.

At our other schools, we have one computer for every four students, in comparison to the national average of one to fifteen. I also have to say that we have much work to do in improving our maintenance and professional development for technology at Glasgow and all of our schools.

Thanks to Governor Carper and our legislators all of our schools are wired for worldwide access to information, in fact every classroom has an Internet link. I also believe that we will be able to address many of our maintenance and professional development needs through the state's and local taxpayer generous support of technology in the form of $3.8 million dollars during the three year period starting this school year.

There are days when I feel that we need a new form of bilingual education to enable us all to understand the language of technology. I say this to highlight an ongoing concern. I believe that we all must make clear what we want to do with technology, and do so in plain language. I think it is important to remember that the term technology refers to things that help us work more effectively or provide the things we need or desire. The question is what is the important work ahead of us, what do we need or desire.

I want to suggest that Federal efforts need to support innovation in four areas:

- Training and retraining the workforce for employment
- Training school aged youngsters in the uses of technology
    - Computer literacy
    - Hardware and software development
- Supporting our ability to create systems that monitor student achievement and techniques that help improve achievement
- Support the creation of administrative systems that reduce paperwork and bureaucracy and increase person to person contact in areas such as finance and human resources.

Federal funds have historically been a source of innovation and dollars for those least well served. In the area of technology, I believe that continuing to support both purposes will help. I also believe that a great service could be provided by bringing people together nationally and regionally to discuss best practices in providing services to students and parents through technology.

Thank you very much for the opportunity to talk with you today.

APPENDIX F -- WRITTEN STATEMENT OF DR. ROBERT SMITH, SUPERINTENDENT OF SCHOOLS, MILFORD SCHOOL DISTRICT, MILFORD, DELAWARE

Testimony to House Subcommittee on Early Childhood, Youth, and Families

Educational Technology

April 12, 1999

Dr. Robert D. Smith, Superintendent of Milford Schools

The war in Kosovo is reported to be costing the United States between 30 and 40 million dollars per day for the high tech weapons and the people to carry out those operations. This appears to be a just expenditure to combat the forces of tyranny that seek to eradicate a people and their way of life.

There is a much subtler and less well funded war going on in America's schools. It is the battle for America's youth. On one side, educators are trying to instill in our youth traditional American values, more advanced academic knowledge, and high tech skills for the modern workplace. They face stiff opposition from drugs, the pop media, and societal pressures that pull at our youth and diminish their academic interest and productivity. If public education is to prevail, it must rapidly modernize its educational delivery system to better meet the needs and demands of today's student. Schools must find ways to offer at least as stimulating a learning environment as can be found outside of classrooms in shopping malls, video arcades, and in homes. Technology must be infused throughout America's schools to provide educators with the tools they need to make learning come alive again for their students. It is in America's best interest and the best interest of our youth that we prevail in this endeavor.

The cost for putting modern technologies into classrooms is currently beyond the reach of many school districts and schools in America. Even for those who are fortunate enough to get grants in aid to set up such systems, too frequently they do not have the recurrent funding or personnel to sustain them. In a recent analysis of technology in the

Milford School District, it was determined that a minimum of $120 per student per year was needed to purchase and sustain a 1-4 ratio of computers to students and that this would take 6 years to accomplish. It will take another $60 per student per year for hardware/network support and approximately $20 more per student for software applications and Internet access. This total is over three times the amount that the Milford School District has historically allocated for yearly curriculum purchases and is a burden most districts simply cannot bear without significant outside assistance.

The Milford School District has been fortunate enough to receive two recent federal grants for technology. One grant out of Title III of ESEA, is enabling the district to purchase two to three computers for all district second grade classrooms and to provide all 2nd grade students with take-home Sony Play Stations and educational software that will extend structured learning time beyond the regular school day. This is part of the Lightspan project, and we anticipate some good results based on data from schools who are in their 2nd and 3rd year of implementation. Our second grant was part of a federal challenge grant to Delaware to pilot instructional management systems. This grant will provide approximately $1,000,000 in funding to the Milford School District over a five-year period. These funds are being used to build a student and instructional data system that will help our teachers to track the effectiveness of units of instruction and to make appropriate modifications that will enhance student performance and achievement. Approximately 70% of these funds will go for software and staff development with the remaining 30% for hardware. The district is seeking local and state funding for the majority of its hardware and support needs so that this effort can be sustained after the grant expires.

One of our most significant findings to date concerning instructional management systems is that almost all of these systems are not assessment-driven, interactive tools but rather act as electronic repositories for curriculum resources, instructional objectives, and lesson plans. Most of these systems are very tedious to set up and there are no clear, short-term payoffs in improvements to teaching and learning. In a sense they are like cars without an engine, meant to take you someplace but without the power to do so. By adding software that will track individual students, sections, grades, and school performance by formative and summative assessment items linked to state standards, grade level indicators, and instructional objectives, you add power and meaning to an IMS system. Teachers and schools will be able to critically evaluate the success and weaknesses of their current practices and this will become the driving force to modify curriculum and instruction through use of the IMS system. Gaps in the curriculum will be identified as well as inappropriately matched instructional practices and techniques. The strengths of the curriculum and instruction will also become evident. Exemplary practices will be identified and recorded in the instructional management system as a resource for all teachers. Teachers with low performing students will then have ready access to lesson plans and digitized video to help them improve their instructional content and/or techniques to produce higher levels of student performance. We estimate it will take 3-5 years to build this compete system but the results should be well worth the effort.

Due to the significant recurring costs of technology and the time needed for staff development and full implementation of a technology initiative, it is recommended that federally funded projects be of sufficient funding and duration to insure at least two complete replacement cycles (6 years) of the hardware/software applications. Given the rate of hardware and software evolution, a replacement (step down) cycle should occur after approximately 3 years of usage. It is also recommended that the federal contribution to a technology project generally not exceed 40% of the total costs for a project. Most projects should have a range of federal funding from 25-30%. This would greatly increase the probability of project continuation after the federal support has been withdrawn. Federal funding should be contingent on a local/state match along with a plan for assuming end-of-project costs. Projects that are highly experimental in nature should be excused from these requirements.

The Milford School District (which is among the poorest in the state) has developed a computer replacement cycle that is not contingent on federal funding and that will enable the district to obtain a 1-4 computer to student ratio within 4 years and sustain it though 2006. In years 1, 2, and 3 the district must purchase 100, 300, and 100 computers with state and local funding. These computers are bought with a 3-year onsite warranty that requires repair or replacement within 24 hours. The district requires vendors to keep on hand, one spare computer for every 100 purchased. The district also holds out-of-service, one computer for every 100 purchased. All computers are pre-imaged with applications that have been standardized across the district. The district assumes full support responsibility for these, our (Level 1) core computer hardware. The same numbers of computers are bought in the next three-year cycle and the old core computers are stepped down to Level 2 applications as they are replaced. The district and school then equally share the support and maintenance of these machines for this second 3-year cycle. When a Level 1 machine goes down, they are repaired or replaced within 2 hours, while Level 2 machines are repaired or replaced within 2 days. After a second 3-year cycle, the Level 2 machines become Level 3 machines and 100% of their support and maintenance costs are the responsibility of the school. Schools may retire these computers when they become cost prohibitive to operate or are no longer functional in the school.

If the Milford School District had a 6 year Federal commitment for 25% of costs of this, its core technology initiative, the initiative could be sustained through 2012 and provide adequate time for the district to find funds necessary to continue this initiative indefinitely. Projects such as this should be explored for funding as they have the greatest potential for making long term improvements to our schools. Every educator must have at least one networked computer in his or her classroom and it must be as dependable as a chalkboard. These computers need to be networked and equipped with an Internet browser, e-mail, productivity software, student accounting/instructional management software, and teaching and learning applications specific to the type of instruction going on in the classroom.

Successful technology projects must also have a clear and inspiring vision for what is to be accomplished. The following excerpts from the Milford School District vision statement are examples of what a vision statement might contain.

> "Technology will be used in the Milford School District to enhance the human potential of our students and staff. It will be used to enhance productivity and self-directed learning. Technology will be used to enrich the human experience. Technology will be available wherever teaching and learning takes place with equitable and appropriate levels of access by students and staff. It will become a critical tool for research, analysis, communication, demonstration, simulation, and expanding content knowledge. Technology will be used to chart student progress toward targeted academic goals. It will be used to record and analyze performance and provide critical data for specialized interventions. In many cases, technology will help deliver those interventions."

Milford District officials took this vision to the community and to the instructional staff in 1996. Officials repeatedly demonstrated the hardware and software using real life applications in public information meetings and forums throughout the district. They used multimedia presentations to help pass a bond referendum to fund the core technology initiative. This bond issue was first tried in 1994 without demonstration or use of the technology and was defeated by a 3 to1 margin. In 1997 a similar bond referendum was conducted with the use and demonstration of the technology and won by a 2-1 margin. The technology was highly effective in communicating the district's vision and needs.

Technology is making a significant difference in Milford Schools. Since a major infusion of new technology in 1997, the district has seen a 15 point gain on the SAT in both verbal and math and is 4th out of 19 districts on the overall 1998 Delaware State Assessment. This has been accomplished with a student population that is 33% minority and 51% low SES. Technology is not solely responsible for this improvement but has definitely played a major role. The district's technology training for staff has not only improved their use of technology but has also changed instructional techniques and curriculum content that we believe is driving our improvement in student performance.

The district has been very aggressive in providing many different kinds of staff development opportunities in technology. In 1996, the district first developed teacher/administrator competencies for technology usage. We then developed a multi-facetted program for staff development to help teachers develop those competencies. Staff move at their own pace though three different technology proficiency levels and must demonstrate proficiency at each level before moving on. One-time stipends are currently paid for mastery and the district is exploring long term performance pay increases for meeting these competencies.

The district has also recognized the need for ongoing staff and systems support. The district used an assistant principal position to hire a Supervisor of Instructional Technology in 1997. This person is responsible for helping staff use technology effectively and insuring that our technology system supports and enhances teaching and learning. There are four technicians under this supervisor who keep our systems up and operating effectively.

Technology is making a significant difference in the way our teachers teach. Since September 1998 when every teacher in the school district was provided a high end computer in their classroom, we have observed (1) more engaging and interactive lessons, (2) more varied teaching strategies and techniques, (3) more current and relevant content being presented, (4) better tracking of student progress taking place, (5) better analysis of teaching and learning, (6) more professional communication and resource sharing among teachers, (7) higher quality of teacher generated materials and presentations, (8) higher levels of motivation and enthusiasm for teaching and learning.

We have also observed changes in student behavior. We have observed (1) more self directed learning taking place, (2) more in-depth student research being conducted, (3) improved writing and presentation skills, (4) increased student productivity and learning, (5) more enthusiastic learners, (5) greater time-on-task with more focus, and (6) more multi-modality learning taking place.

Technology is changing what and how we teach. It has become an invaluable resource to teachers and students for research and acquiring new content knowledge. We are beginning to use technology to deliver some types of instruction and to track individual student progress on our state standards and grade level proficiencies. It is becoming a critical tool in the analysis of our effectiveness in accomplishing our stated goals for students, teachers, and schools. It is helping our administrators become more effective and efficient managers and freeing up more time for them to exercise their educational leadership. The more that technology becomes available, the more ways we will find to use it to improve teaching and learning in our schools. I strongly urge the Committee on Education and the Workforce to support core technology initiatives in schools today, so we as educators can better develop a well-trained and informed workforce for tomorrow.

Taking the Technology Challenge:

A Case Study in Innovation

By Robert D. Smith
Superintendent
Milford School District

One of the most complex challenges facing educational leaders today is how to realize the full potential of technology for improving teaching and learning in our schools. Technology is expensive to purchase, requires sophisticated support and maintenance and needs location-specific power sources and network connections to operate effectively. Once purchased, supported, and brought into operation, a funding stream must be found to maintain and replace this equipment as it reaches obsolescence, usually 5-10 years in most educational settings. The effective use of technology in schools requires extensive planning, on-going staff development, on-going technology support, appropriate software acquisition, integration with curriculum and instruction and adequate student/teacher access to the technology.

The first step in this process was a needs assessment to determine what technology existed in the district and how it was being utilized and supported in conjunction with the district's technology plan. It included a review of the technology successes and failures that had occurred over the past ten years, a determination of staff proficiency levels in regard to the effective utilization of technology, and finally, a clarification of district stakeholders' expectations for technology in our schools.

After this data was collected, it was shared with board members, parents, teachers and administrators. Out of these discussions came a new vision statement for how technology should be used to enhance human performance and productivity in the Milford School District. There also came recommendations to provide more human, technical and financial support for the district's technology initiatives and to revise and operationalize the district's technology plan. A committee reviewed these recommendations and developed a three-part action plan to address identified needs and concerns.

The funding concerns were addressed first. Without additional sustainable funding to purchase computer hardware, software and support, it was impossible to implement the types of programs and services needed to realize the district's vision. Nearly three-fourths of the district's computers could not run modern software applications like Windows or Office 95. Many classrooms had no computers for students or teachers, and the ones that did had frequent downtime or application problems due to the age and condition of the equipment.

The district addressed the funding deficiencies for technology through a successful referendum held on March 15, [illegible] [illegible]mation on the district's needs and the solutions propos

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referendum were communicated throughout the community using PowerPoint presentations. This proved a very effective way of communicating important information, while at the same time, profiling the technology and teaching techniques that were being promoted for use in our schools. Out of $500,000 in new local funds raised to support current operations, $150,000 was forever committed to the funding of educational technology in the district. These new funds, along with prior local commitments to technology, provided an ongoing, annual funding line of $240,000 to purchase and support educational technology in a district of 3,800 students. In August 1997, the district purchased 120 new computers with these funds. At the same time, a computer replacement cycle was established that will take these computers off-line after five years and replace them with new computers. These off-line computers will continue to be used by students for stand-alone applications such as word processing, spreadsheet calculations and the creation of multimedia presentations for three to five more years. Under this plan, the district will put 600 high-end, networked computers in the hands of 3,800 students and 260 teachers within five years. Within eight years, the district will have approximately 1,000 high-end computers in our schools, a ratio of about one computer for every four students.

With this funding plan in place, the district has been able to leverage additional funding from state, federal and corporate sources to support our technology initiatives. The district has competed for and secured over $300,000 in additional technology funding in just the first half of the 1997-98 school year. The demonstration of local effort to support technology, along with our vision, planning and support, has opened the door to many new funding opportunities that will help the district realize its goals for educational technology.

The second part of the district technology action plan was to improve human and technical support for technology implementation and utilization in schools. It was recognized early on that if the technology could not be made reliable, functional and of real educational value to students and staff, the return on our investment would never be realized. The district had one technology specialist to maintain over 500 old and failing computers, develop and manage the district's rapidly expanding computer network and try to help students, teachers, secretaries and administrators make use of the technology to become more effective and productive in their jobs. Seventy-hour work weeks, a wealth of technology experience and expertise and a tremendous personal commitment to the district's technology initiative by our technology specialist was the only thing that kept the district from a total technology meltdown. More staff was needed if the district was to advance its plans for technology.

By September 1997, the district had committed a second academic excellence unit to support its technology initiatives. An academic excellence unit in Delaware can be used to hire one teacher/specialist or two paraprofessional/support personnel. The Milford School District used one of these units to hire two technology support persons to assist the technology specialist in maintaining our computers and local area networks.

In July 1997, an unfilled assistant principal's position was converted to a supervisor of educational technology position. The district then hired an administrator with expertise in educational technology, curriculum and instruction and adult and student learning theory as part of our technology team.

The technology specialist and his assistants assumed primary responsibility for the development of hardware and network standards, the design, operation and maintenance of the district's local

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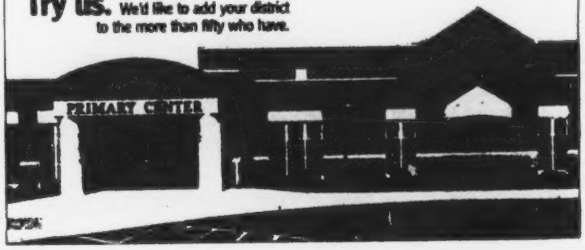

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and wide-area networks, the establishment and maintenance of network security, the set-up and maintenance of computers and other hardware and the approval of software programs based on compatibility with hardware and network specifications.

The district's new supervisor of educational technology assumed primary responsibility for the development of student and staff competencies in technology, staff development programs for technology application/utilization, the integration of technology into curriculum and instruction, the development and implementation of a computerized student accounting and instructional management system and heading the district's technology team in its work to revise and operationalize the Milford School District Technology Plan.

The final component of the district's technology action plan was to revise and operationalize the technology plan itself. Work on this began in August 1997 by a district technology committee. New staff and student technology standards were developed and adopted by October 1997. Student technology competencies were then developed and are currently being evaluated in demonstration projects across the district. Staff competencies were also established, along with a technology-skills and applications training program for helping teachers, administrators and secretaries make effective use of technology. Over half of the district's staff participated in the new technology training program in its first six months of operation. All staff will be provided the opportunity to receive training in this program prior to September 1998 when every classroom in the district will receive a new networked computer loaded with productivity and instructional software.

The Milford School District and the Milford community believe that its students must acquire knowledge and skills in technology to be adequately prepared for college and the workplace. Through aggressive funding, planning, staffing and training initiatives, technology literacy is quickly becoming a reality for all the district's students and staff. ❑

APPENDIX G -- WRITTEN STATEMENT OF MS. SALLIE REISSMAN, TEACHER, LOMBARDY ELEMENTARY SCHOOL, WILMINGTON, DELAWARE

Subcommittee on Early Childhood, Youth and Families
Hearing on Education Technology in Delaware's Schools
Monday, April 12, 1999
Testimony by Sallie A. Reissman

Good morning, I would like to thank Congressman Castle for inviting me to speak to you today. I am a third grade teacher, from Lombardy Elementary School in the Brandywine School District. I am currently pursuing a Masters in Applied Technology in Education from Wilmington College. I enjoy using various technologies in the classroom and would like to share with you how I have been able to integrate technology in my teaching.

Although I do not consider myself a computer expert I have had access to a computer in my home for several years. I have given a lot of thought to the question you've posed, "How may we better assist schools to expand access to technology in the future?" ACCESS, is the key word. For the integration of any technology in schools to be successful, those most responsible (the teachers) must have ***access*** to the technology.

When microcomputers first entered schools in the 1980's, and even into the 1990s, most teachers didn't have a computer at home. Therefore many teachers still have little experience with one. Making a computer available to each teacher, at their desk, would allow them to become productive and comfortable with technology.

Teachers spend a fair amount of time (after the students have left for the day) doing things other than teaching. I started using my home computer for grades, letters to parents, lesson plans, worksheets, tests, and charts. It made my life easier. I was able to create professional looking materials and strengthen my computer skills at the same time. Most importantly, it made me a better, more productive teacher. As we all know, the teacher is the most influential element in a student's life. So anything that helps the teacher also helps the students.

Regardless of whether a teacher has their own computer at home or their desk becomes an office. you must make the software as accessible as the hardware. One step in that direction is to make sure that software purchases are Macintosh and Windows compatible and that the software license allows teachers to preview the programs at home.

The computer entered the world of education with the focus on getting one into the hands of individual students. Computers are not an end in themselves. Technology, by definition, is a tool. The goal of technology integration into the classroom and curriculum is not to expose students to computers. What students learn today about computers may have little if any bearing on how students interact with computers by the time they leave school. The goal is to support an underlying educational purpose.

Technology, whether it's a calculator, overhead projector or computer, can do for teachers and students what it has done in the business world: enhance personal productivity. As I described earlier, the computer has had a valuable impact on my performance in the classroom. I am able to organize and manage personal data of each student with a simple database. I have learned to create materials that enhance my lessons, such as; timelines, graphs, worksheets with graphics, and colored transparencies.

Communication with parents has also improved since the beginning of my weekly computer-generated note. This note (using a word processing template) describes the activities we've completed and includes a progress report. A weekly homework newsletter has also improved student achievement and parent involvement.

One of my favorite ways to use technology is as a presentation tool. In the 1840's the chalkboard was introduced as a revolutionary way to present information. The magic lantern and stereoscope were available in 1893 and it was proclaimed, " The age of illustration is upon us and illustrate we must if we hope to gain and hold the attention of young and old." Times really haven't changed.

My school recently received a large TV monitor that connects to the classroom computer. This tool has made a tremendous impact on my ability to instruct the entire class.

I have been able to create multimedia presentations with color, transitions and dazzling effects. Which keep the attention of children from the television era. I have used these presentations for direct instruction or engaging students in a discussion.

I've spent the bulk of this testimony describing how a computer has helped me teach. However, the computer also has a place as a tool for group and individual student work. My school (Lombardy) has a computer lab that the children visit weekly for 45 minutes. The lab has 15 computers allowing the children to work in pairs. The lab had 30 computers but the children seemed to learn more if they shared their experiences with a peer.

The students receive instruction in word processing, using the Internet, software applications for skill and drill, and various other lessons. The lab, however, does not give the children enough time and integration with the classroom curriculum. Therefore, each classroom has two computers (one old and one new) for the teacher to use as they wish.

Most teachers use the computer for a reward or remediation. I've tried to use the computer with my students in many different ways. We are wired to the Internet, which is a wonderful tool to use for research, e-mail, and publishing. We have keypals (e-mail penpals) in Australia which integrates our lessons on letter writing and cultural differences.

I've created a web site for my class that will be linked to the school site. Each student is currently contributing some of his or her written work to this project. The students are also working in pairs with authoring software called HyperStudio. I can't tell you how excited the students have become to create their own presentations.

As a reading incentive our school is testing a software package called Accelerated Reader. This program has generated enthusiasm for reading first and the computer second. A database keeps track of each student's reading progress, which is very helpful for the teacher and parents.

The classroom computers are also used as a center to enforce a unit of study. For example, when we studied the colonial and frontier times the students learned a great deal from a program called Oregon Trail. They would say, "It's FUN!" I knew it was educational.

I would like to add, before I finish, that technology is not just the computer or Internet. In previous years I have engaged my students in video taping a book promotion. Recording a book on tape. Creating clay animation projects. Building an igloo from recycled materials or inventing a new product. Technology is Velcro, sticky notes, and chalkboards.

As our curriculum becomes standardized, the technology made available to teachers will only enhance their instruction. Teachers and children will learn to use these tools to become productive educators and members of our society. We need to place a computer on every teacher's desk, and provide training for proper integration.

As more households purchase a computer the gap will close. Future educators will have grown-up with a computer from birth. But a teacher will always be needed to guide our children with whatever tools the future may present.

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Papert, Seymour. *Children's Machine: Rethinking School in the Age of the Computer.* New York: Basic Books, 1993.

Testimony by Sallie A. Reissman
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Personal Information:

a. Please list any employment, occupation, or work related experiences, and education or training which relate to your qualifications to testify on or knowledge of the subject matter of the hearing:

Current Employment

Third Grade Teacher, Lombardy Elementary School, Brandywine School District

Consultant and Coordinating Director, Wilmington College Family Learning Center, Rehoboth Beach

Current Education and Experiences

Bachelor of Science in Early Childhood and Elementary Education, Certified

First Class Teacher Award for the State of Delaware, 1997

Certified in Applied Technology in Education, Wilmington College (pursuing masters)

Presenter, 1999 Delaware Instructional Technology Conference, "Technology Pals"

Educational Technology Workshops, "Integrating Technology Projects in your Classroom", "Effectively Implementing Technology in your Classroom"

b. Please provide any other information you wish to convey to the Committee which might aid the members of the Committee to understand better the context of your testimony:

I am a wife and mother of two children. I returned to college, to become a teacher, after staying at home with my children until they entered school. I feel strongly that children need a variety of tools and technology to learn. We each grasp and retain information in a variety of ways. Providing teachers with the latest equipment will allow them to use these tools to teach the core curriculum. Children can already manipulate a computer better then we can, but they need the guidance of a teacher to use these tools properly to enhance learning.

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APPENDIX H – WRITTEN STATEMENT OF MR. CHARLES AMMANN, TECHNOLOGY PROJECTS SPECIALIST, CAPITAL SCHOOL DISTRICT, DOVER, DELAWARE

House Committee on Education and the Workforce

Testimony of:
Charles "Ted" Ammann
April 12, 1999

Good morning members of the House Committee on Education and the Workforce, members of the press, and members of the legislative and educational community present here today.

Over the past 5 years Congress has enacted a variety of educational instructional technology programs and initiatives. The authorizing legislation and resulting programs all evolved from documented local needs expressed to Congress by constituents across the country. The programs include Technology Innovation Challenge Grants (TICG), Technology Literacy Challenge Fund (TLCF), Star Schools Distance Learning Programs, the Regional Technology Education Centers (RTEC) and most recently, Preparing Tomorrow's Teachers to use Technology. I'm honored to have an opportunity to share with you information regarding our Technology Innovation Challenge Grant, The Capital School District / State of Delaware Interactive Educational Television Consortium.

The TICG program has awarded 82 large-scale developmental projects intended to produce carefully designed and evaluated practices and products. These products and practices can be disseminated on a national basis for local adoption or adaptation by schools and districts. A variety of other federal, state and local funding sources such as Technology Literacy Challenge Funds, Title I and Goals 2000 can be used to fund the local adaptations of the TICG products and practices. TICG projects are competitive grants to consortia of schools, businesses, and universities across the country. These projects have become a highly valued resource for schools seeking technology solutions to meet educational needs (Cradler. J. and Cradler. R.. Educational Technology Reauthorization White Paper. 2/16/99).

President Clinton awarded our Technology Innovation Challenge Grant in October of 1995. As one of the original 19 grants. President Clinton charged us *"to work together to help our schools to use technology to revolutionize American education so that all children will be able to learn better and teachers will be able to be more effective."(President Clinton Address to Challenge Grant Recipients, October 1995)*

The Capital School District/State of Delaware Interactive Television Consortium grant was conceived to address a number of issues prevalent in many school reform movements. The ever-changing world of technology warrants a grant of this magnitude to be flexible while adhering to the goals set forth in the grant application. Using technology we are bridging homes and schools in a variety of ways to meet 4 main goals.
The goals are:

- Extending the school day
- Increasing parent involvement
- Providing equity in technology distribution.
- Providing in-service to teachers on the integration of technology.

These goals were extrapolated in many studies highlighted in the abstract of the grant application. As with any reform movement, an overriding goal was that of increasing student achievement. I will address that goal later in my testimony.

As emphasized by the Department of Education Challenge Grant program director, Thomas Carroll, the grant money was intended to be seed money. This money would serve as a catalyst for public and private sectors to work together to make an impact in the educational technology arena. As such, the implementation of this grant relies heavily on the partnerships of schools, businesses, and school communities. A significant partner, The Lightspan Partnership, Inc. provides three components that utilize the latest technology. The grant prides itself on bringing commercial technology applications to the educational community. While previous technologies were commonplace in the business sector for years before making their way to schools, cutting edge technologies are being introduced to the educational arena where they can impact student achievement.
The initial component consists of interactive educational software that keeps in perspective that a child's work is --play! Most significant is that the software is available on classroom computers, as well as portable devices that can be sent to the students' homes.

Another component utilizes the Internet and its vast resources. The Lightspan Network links participating teachers, students, and families with others around the country in a sheltered, yet non-limiting environment. The network and its games, activities, and resources have proven helpful in pursuing our goals in schools and homes alike.

Finally, each participating school is also building and maintaining an interactive website based on JAVA technologies. While commercial industry can pay 50K or more a year for a webmaster, the collection of template based web design tools allow schools to create professional looking website that serve as the ultimate bridge between schools and homes. Many of our school sites are experiencing more than 700 "visits" per month.

These tools are supported with an extensive array of staff development provided through contracting expertise and recognizing model teaching within the grant. Grant personnel identify contact people at each sight who participate in the "Teacher Trainer Model" helping to sustain the project for years to come.

It is in my capacity as the Technology Project Specialist that I am here today. I have been coordinating the implementation of this reform project in schools throughout Delaware. With 36 schools and more than 300 teachers in the project, training is of paramount importance. Prior evaluation results (1995, 1996) indicated that "Technology can't be implemented merely using a "proximal approach." Having the technology in close proximity does not ensure its appropriate use." I work with educational consultants and teacher trainers to coordinate the training of teachers and parents to use these resources effectively.

While I see the positive influence that this grant has provided to teachers, parents, and students on a daily basis, more telling is the documented research report completed by Dr. Susan Giancola, senior associate for Evaluation with the Delaware Education Research and Development Center at the University of Delaware.

At this point, I would like to focus on that report and share with you its findings. The evaluation of the Delaware Challenge Grant program is designed to provide relevant information regarding the implementation and impact of the Delaware Challenge Grant project. The focus of this five-year evaluation is to provide information regarding how well the project has met its primary objectives: 1) to generate more learning time for students by increasing parent involvement in education, and 2) to ultimately improve student achievement. Researchers have been measuring the project's progress towards these objectives using a variety of evaluative methods, including home usage logs, classroom usage logs, staff surveys, parent interviews, student surveys, and student achievement testing. The evaluation results highlighted here are based on fifteen public elementary schools and one parochial elementary school participating in the project in the Fall of 1997.

Increasing Learning Time through Parent Involvement:

Many parents whose children participate in the project reported that the amount of time their child spends watching TV has decreased since involvement with the project. Further, about one-third of parents indicated that the amount of time their child spends doing schoolwork has increased since involvement with the project, as has the amount of time their child spends participating in family activities. The students confirmed the parent findings, as almost half of the students said they like the programs so much that they would rather use the software than watch TV. In fact, students who use the software programs at home with a grown-up said they liked the programs even more than students who worked individually at home. When students use the instructional software at home, they usually use it between 30 and 60 minutes. Finally, teachers were also pleased with the parent involvement spurred on by the project.

Parents have been pleased to be a part of this exciting project. In supporting testimony parents who have participated have shared their experiences. Kristine Simon of Dover, Delaware – a single parent of two children involved in the project said, "Before [becoming involved in the Challenge Grant] homework and reading practice was a fight to the bitter and frustrating end." She went on to claim that, "[The Challenge Grant project] is exciting enough to grab and hold the attention of both my children." Parents of students involved in the project throughout the state have expressed similar sentiments. Diane Albanese, a parent in the Cape Henlopen School District noted that her son, Alex, "came home one day and told her that they had an "eyeball" in his classroom. That is, his third grade class would be featured on the Internet. Sure enough, when I connected with the H.O.Brittingham website [provided by the grant], there they were – Mrs. Joseph and the class – learning about spelling, doing math activities, and going to lunch. Even Mr. Peters the music teacher was there…I was fascinated watching my child learn. This is precisely the effect that was intended." A teacher stated, "it definitely brought more parents into the school setting and into finding out what is going on in the school. Some of the families that became involved in the project are families that may not have typically been involved in school activities."

Equitable Access to Technology:

In the past few years, technology has become a commodity. The gap between the haves and have-nots will dramatically increase if equity concerns are not addressed at the local school level. Some families will be able to provide technology for their students to use while others, due to a lack of resources, will not be able to provide the necessary technology to keep up with their peers. The consortium has devoted its effort to include at least one school in every Delaware district with elementary students grade K-4. These schools were selected based upon having the greatest percentage of free and reduced price lunch eligibility. These students are the ones at greatest risk, with the fewest resources to acquire the technology and all its promise.

Improving Student Achievement:

Reading and mathematics achievement tests were administered to students. Second-graders were given the Stanford9 open-ended format in both the fall and spring. Second graders increased their math and reading test scores significantly over the course of the year. Student achievement scores were further analyzed in relation to a national reference population. The students significantly increased both their reading and mathematics achievement scores in relation to the reference population. In fact on average, the students outperformed 15% more of the students in the reference group in the spring than they did in the fall on the reading assessment. On the math assessment, students increased their standing in relation to the reference group an average of 14 percentile points. With such significant results, we have submitted another Challenge Grant proposal that would include an estimated 2800 additional children from the lowest income families who currently live in public housing projects.

In closing, the Capital School District / State of Delaware Challenge Grant has been able to serve the needs of 10,250 students and families from 36 participating schools. More than 400 teachers have taken part in the project – receiving over 1000 days of staff development that has translated into a new paradigm of integrating technology not only into their school day but into the homes as well. More than 700 classroom computers have been provided along with software that is instructionally in line with Delaware and National standards. Without the significant contributions made to these schools through the challenge grant, many of these opportunities would not have been made available.

The Technology Innovation Challenge Grant Program focuses on development and dissemination of promising practices and products that use technology to improve teaching and learning. The competitive process used in funding this project ensures that our consortium goals were inline with the major program indicators outlined by the US Department of Education. These indicators were to: target under-served populations, serve as a major professional development resource, leverage partnerships with business and industry, and emphasize the evaluation of technology impact on learning (Cradler, J. and Cradler, R., 2/16/99). We have met this challenge!

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Charles "Ted" Ammann

Experience

1997–Current Capital School District Dover, DE

Technology Coordinator

- Managed $5.5 Million USDOE Technology Innovation Challenge Grant
- Responsible for coordination of staff-development
- Responsible for technical specifications and installation
- Responsible for Windows NT network including backup, web server, fileserver, RAS, chat server, video server
- Implemented web presence for internal communication and dissemination as well as external communication
- Developed strategic partnerships with vendors and institutions
- Coordinated the implementation of the project with teachers, principals, district level administrators, and vendors

1995–1997 Capital School District Dover, DE

Technology Systems Teacher

- Oversaw the wiring of seven buildings with Cat/Coax and Fiber.
- Implemented District Acceptable Use Policy and Internet training program
- Responsible for the migration to electronic circulation systems
- Provided technical support to elementary and middle schools
- Liaison to Delaware Center for Educational Technology
- Provided staff development to hundreds of teachers

1993–1995 Hartly Elementary School Hartly, DE

Elementary School Teacher

- Planned and implemented lesson plans in a fourth grade setting
- Served as district technology teacher trainer
- Pioneered the use of multimedia in the district.
- Led after school computer clubs for both students and teachers

Education

Current Univ. of Delaware MBA program
- Concentration in Management Information Systems

1997–1998 HTR Client-Server Specialists Washington, DC
- MCSE Program – all courses completed – MCSE certification w/ electives in IIS, TCP/IP and Exchange

1997–Current Delaware Technical College Dover, DE
- Enrolled in Windows Programming Certificate program: GPA 4.0
- Coursework in Visual Basic, Unix, and AS/400 operating systems

1993–1998 Additional Coursework DE
- 15 credits of graduate coursework in Curriculum and Technology

1988–1993 University of Delaware Newark, DE
- B.S., Elementary Education 3.04/4.0
- Additional work in Computer Science
- Outstanding Student Teacher Award
- Education College Council President
- Coursework in Computer Science

Honors

- District Teacher of the Year 1996
- Science Education work highlighted in state standards 1995
- Apple Distinguished School Program 1997
- Apple Distinguished Educator Program 1998

Interests

Bicycling, traveling, computers

References

Available upon request

April 6, 1999

To Whom This May Concern:

I am writing to you to rave about the Challenge Grant program that is currently in place at my children's school.

Television and games systems have generally served as babysitters for children, an easy way to keep them quiet on busy days. Television commercials are flashy and attention holding, and promote the idea that these games systems are cool to have. The grant program has positively routed the hype created by the game companies to promote the idea that education is cool.

I am a single parent of two children, and am often tasked to find activities that appeal to all of our interests. The Lightspan discs used in the Challenge Grant program are exciting enough to grab and hold the attention of both my children (first and second grade). When we first became involved in the Lightspan program, I was constantly stopping whatever I was doing to "Mommy, look!" Because of this, I have instituted a "New Disc Night". When my son brings home a new disc, we take turns as "controller" and explore the entire program, including the background surprises on the screens. Usually my children go back again and again to explore their favorite parts.

Since the discs focus on Math and English, my son gets to review and reinforce what he is currently learning. My first grader is benefiting by getting a "sneak peek" of what is to come. My daughter has greatly benefited from her brother bringing home these discs. Before, homework and reading practice was a fight to the bitter, frustrated end. By helping Cali to accomplish her adventures, my daughter has shown me that there is a way to get her involved in learning. Hopefully, the rest (homework without a fight) will follow.

I feel that the Challenge Grant is a wonderful, fun way to get the whole family involved in education. I hope to see more things from this program.

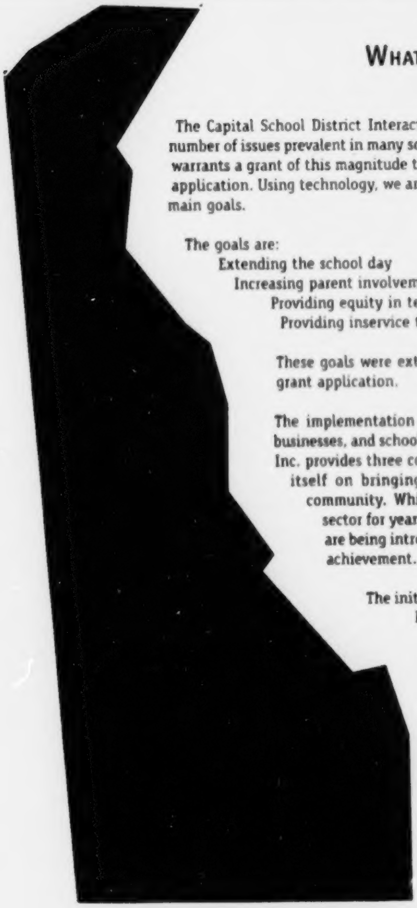
Sincerely,

Kristine E. Simon

Kristine E. Simon

BRIDGING HOMES AND SCHOOLS

THE CAPITAL SCHOOL DISTRICT / STATE OF DELAWARE INTERACTIVE EDUCATIONAL TELEVISION CONSORTIUM
A FEDERALLY FUNDED TECHNOLOGY INNOVATION CHALLENGE GRANT



WHAT IS THE GRANT ALL ABOUT?

The Capital School District Interactive Television Consortium grant was conceived to address a number of issues prevalent in many school reform movements. The everchanging world of technology warrants a grant of this magnitude to be flexible while adhering to the goals set forth in the grant application. Using technology, we are bridging homes and schools in a variety of ways to meet four main goals.

The goals are:
- Extending the school day
- Increasing parent involvement
- Providing equity in technology distribution
- Providing inservice to teachers on the integration of technology.

These goals were extrapolated in many studies highlighted in the abstract of the grant application.

The implementation of the grant relies heavily on the partnerships of schools, businesses, and school communities. A significant partner, The Lightspan Partnership, Inc. provides three components that utilize the latest technology. The grant prides itself on bringing commercial technology applications to the educational community. While previous technologies were commonplace in the business sector for years before making their way to schools, cutting edge technologies are being introduced to the educational arena where they can impact student achievement.

The initial component consists of interactive educational software that keeps in perspective that a child's work is —play! Most significant is that the software is available on both classroom platforms and Sony Playstation™ platforms. The Sony Playstation™ allows schools to provide simple, yet powerful RISC based computers to homes.

Another component utilizes the Internet with its vast resources. The Lightspan Network™ links participating teachers, students, and families with others around the country in a sheltered, yet non-limiting environment. The network and its games, activities, and resources have proven helpful in pursuing our goals in schools and homes alike.

See GRANT on page 3

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Bridging Homes and Schools: One of Many State Initiatives

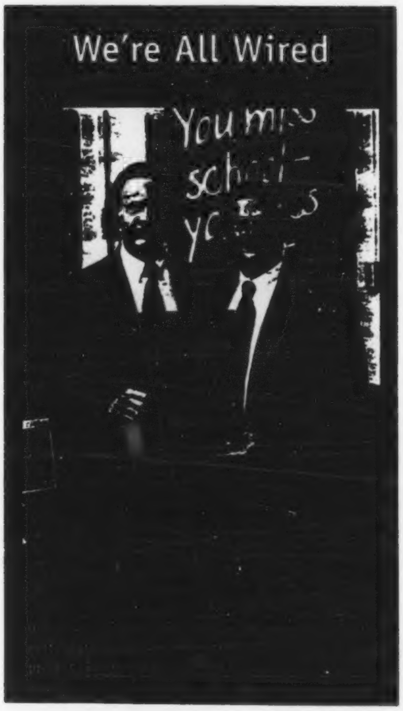
by: Wayne Hartschuh, Ph.D.

In the spring of 1995, the Delaware Legislature accepted the recommendation of Governor Thomas R. Carper to establish the Delaware Center for Educational Technology (DCET). The Executive Director of the Center is Dr. Wayne Hartschuh.

The Center's mission is to create a modern educational technology infrastructure in Delaware's public schools to enable students, through the use of educational technology, to meet academic standards set by the State Board of Education and to develop the skills needed by a world-class work force.

The vision of DCET reflects an absolute commitment to the principle of equity: ensuring every teacher and child in each of our public schools and classrooms is provided with an equal opportunity to utilize technology in the educational process. This vision also reflects the fundamental belief that technology in education is critical to the creation of a competitive 21st century workforce and that a competitive workforce is a major contributing factor to strengthening and maintaining Delaware's economic viability.

In October 1998, the Delaware Center for Educational Technology completed a three-year project to wire every public school classroom in the state. This made Delaware the first state in the nation to have network access in every public school classroom in the state. The project was completed on time and within budget. The classroom wiring project took $23.5M of the appropriated $30M to create an educational technology infrastructure in Delaware's public schools. With the wiring project complete, all residual funds are being used for network servers and infrastructure enhancements.



harness

maximize our investments

"Information technology is profoundly changing the American economy and workplace. The question is no longer whether states and local school districts should use technology to support instruction but how they should do so. The money we spend in education technology must produce results.

If we are to remain competitive in a technology driven world, our graduates need to be prepared. Harnessing technology will carry us into the 21st century, positioning our nation for a strong economic future.

Teachers are using technology to enliven and enrich curriculum and enable students to learn at their own pace. This hands-on, interactive medium makes learning fun and makes it more relevant for students."

-Governor Carper
National Governors Association
1999

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Capital School District Proud to Serve as Lead Education Agency *by James Hammond, Ed.D.*

As the Superintendent of Schools, I am honored to offer comments regarding the significance and importance of the Technology Innovation Challenge Grant. The Capital School District is proud to serve as the lead education agency for the State of Delaware Interactive Educational Television Consortium. This federally funded technology initiative is changing the way Delaware schools and students access information technology. The selection of Capital as the administrative entity for this major project validates the district's commitment to providing quality learning experiences for all students through the development and implementation of a 21st century curriculum infused with technology.

> *"The project erases the obstacles created by financial barriers"*
> *- Dr. Hammond, Superintendent*

The project provides each program participant access to computer technology and software that extends learning both in and outside the classroom. A unique feature of the program is that each student is provided a Sony Playstation™ designated to run educational software through the home television. This allows students to continue learning experiences beyond the normal school hours. Parents use the Sony Playstation™ to work closely with the teacher and establish two way communications with the classroom. Students use educational software to reinforce classroom learning.

The Delaware Interactive Educational Television Consortium works to provide equity in technology distribution. For many of our students, access to technology is limited. This project erases the obstacles created by financial barriers. All students are provided equal opportunities to experience learning and reinforce skills through this information age process.

As the lead agency, Capital School District provides valuable assistance to teachers in the effective integration of technology in the classroom. Technical assistance and support is an important part of this project and teachers depend on the expertise of district personnel to keep the program operating as designed.

The business partnership with the Lightspan Partnership, Inc. has benefited every member of the consortium. Providing assistance in connecting classrooms to home and creating a school-based website are examples of the important collaboration with this corporate partner.

Finally, technology in its many forms will continue to change and improve the way we access information and make that information available to students. The Capital School District is prepared for the challenges ahead. I hope that you will enjoy reading and learning about some of the technological programs and services available for students here in Delaware.

One of Many State Initatives (Cont.)

The efforts of the Delaware Center for Educational Technology have been recognized nationally, as DCET has received a Computerworld Smithsonian Award for the Classroom Networking Project. The project is part of the 1998 Information Technology Innovation Collection that was formally presented to the Smithsonian Institution on April 6, 1998. The case study and support material are part of the Smithsonian Institution's Permanent Research Collection on Information Technology Innovation at the National Museum of American History.

In addition, in the spring of 1998, the State Legislature appropriated $13M over three years for technology acquisitions for educational staff and students. The intent of the appropriation is to ensure that every classroom has a computer connected to the Delaware Education Network.

● ● ●

First State in Education

Every Classroom, Every Teacher, Every Child
-D.C.E.T. Vision

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A Day in the Life of a Teacher-Trainer

GREENWOOD
Elementary School
1999

With 36 schools and more than 300 teachers involved in the project, training is of paramount importance. In addition to contracting with Lightspan to provide training to teachers, the grant employs two full-time teacher trainers. These teachers help the participating schools in a variety of ways. The following is a peek into a day in the life of a teacher-trainer.

Thursday, 1999
The day begins in a classroom of fourth graders. The lesson pertains to making student web pages. The students are shown example web pages on the Internet and told to "brainstorm" what they would like the world to know about them. Students enter the information into the templates and are given passwords so that they would be able to continue later. The students are told that the next lesson would include adding graphics.

> *"Technology can't be implemented merely using a "proximal approach." Having the technology available does not ensure its appropriate use."*

Next, the teacher/trainer goes into a multi-age class of first and second graders. She models a lesson on rhyming words using some of the grant software. She gives the teacher a copy of the lesson plan that includes Delaware state standards that were addressed in the lesson. The principal of the building stayed to watch the lesson to get a better feel for the program and how to implement it in a whole class setting. At the conclusion of the lesson, the teacher/trainer leaves the classroom with a promise of returning at a later date.

The third stop is in a second grade classroom. This particular teacher had requested the teacher/trainer develop and present a lesson in the monetary realm as a culminating activity to their mathematics unit. The teacher/trainer takes this group of students on a money adventure. The excitement is overwhelming and the students can not wait to continue the activity when they get home. It is evident that this lesson is well received by both the teacher and the students.

Afterwards, the teacher-trainer meets with a long term substitute teacher and explains the goals and components of the program. The teacher/trainer explains the uses of the Playstations™, CD-ROMS, the Lightspan Network™, and Local Connect™. She demonstrates various ways that these tools could be applied to excite the students and involves them in the learning process. This is the first step in training this teacher in utilizing the technology.

After finishing the "money lesson" with a different class, the last stop in the school is a kindergarten teacher's classroom. The teacher wants to learn how to develop her own web page explaining her classroom. Once the teacher is on her way to being a "webmaster" the teacher trainer leaves to grab a quick bite to eat before the evening's activities.

Arriving at a new school, the teacher-trainer prepares for the home-deploymet. This consists of stuffing CD-ROMS into shuttles and arranging Playstations™ and shuttles for the evening events. Since this would be the first time that the parents are introduced to the grant, it is important that everything runs smoothly. The teacher/trainer introduces herself to the parents and explains the grant. After demonstrating the software, parents are given a chance to ask questions and complete paperwork.

The teacher/trainer goes home feeling a sense of accomplishment contemplating what the next day has in store for her.

> *"Merely providing technology in the classroom is no more equity than merely allowing each student to touch a $100 bill."*

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CAPE HENLOPEN & WOODBRIDGE

H.O. Brittingham & Woodbridge Selected as Model Schools

H.O. Brittingham Elementary School in the Cape Henlopen School District and Woodbridge Elementary School in the Woodbridge School District were recently named "Lightspan Model Schools" for their implementation of Lightspan technology in their respective schools.

The "Lightspan Model School" honor is bestowed each year on schools that show progress towards achieving the Lightspan vision of bridging homes and schools through the use of technology. It is awarded by the Lightspan Partnership™.

Traci Hitchens, site coordinator at Woodbridge Elementary was elated to hear the news of the selection. "This shows that people are recognizing the hard work that teachers are putting into this process. I am thrilled," she said. Deb Adam, Lightspan Consultant, says that she expects continued success and recognition for our Delaware schools. "Before the year is out, I would expect more schools in the state to be recognized."

See "A Fun Way to Teach Content..." p. 10.

The grant serves 3000 families per year!

Once the Playstations are in the home, research has shown that it is used by siblings, relatives, and friends from the neighborhood. This increases the total number of students affected. Currently 3000 families are involved each year. In the first four years of the grant, as many as 10000 families may have been involved in the project.

SEAFORD

Coorindator Hired to Monitor Traffic on Home-School Bridge

Seaford Central Elementary School has appointed Christie Almedia to be its Coordinator of the Challenge Grant program. This position is being funded via Title I monies. This new half-time position is making a full-time impact on the continued building of the Home-School Bridge in Seaford.

This may not seem to be big news, but it is. It is a whole new way for a school to approach the implementation of the Challenge Grant. In other schools this task is doled out to a teacher already performing a full-time job -- teaching. Ted Ammann, Challenge Grant Project Coordinator, and a former Capital School District Teacher of the Year, hails the decision from both an administrative and educational standpoint. "Teachers are very busy educating our kids, they are constantly called upon to take on other duties. The Challenge Grant is one of these duties in many schools. It is good to see this job taken on in a new way and not being added to a teacher's work load. Principal Jim Stover should be commended for his creative approach to solving a technology staffing problem."

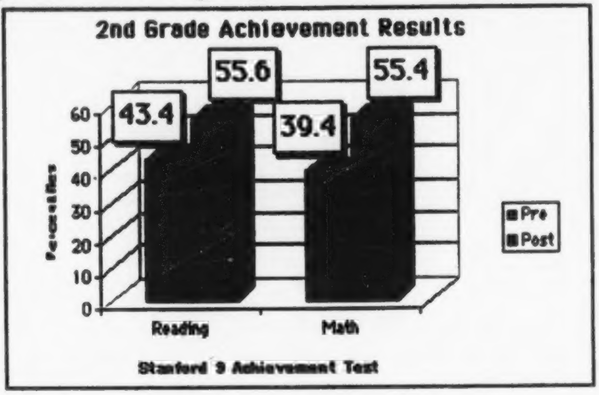
Mr. Ammann added, "Some may question the expense of taking such an action. However, they must realize that there is sometimes a toll even on the Home School Bridge."

> *"Some may question the expense of taking such an action. However, they must realize that there is sometimes a toll even on the Home School Bridge."*
> *- Ted Amman, Grant Coordinator*

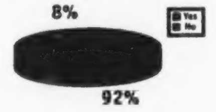
Evaluation Report: "They're

Delaware Challenge Grant Graying the Line Between Home and School

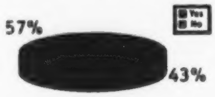
Delaware's Technology Innovation Challenge Grant program is truly a school-based, home-reinforced, and technology-focused instructional program for elementary school students. The evaluation of the Delaware Challenge Grant program is designed to provide relevant information regarding the implementation and impact of the Delaware Challenge Grant project.


2nd Grade Achievement Results

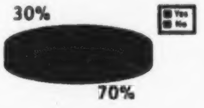
Students Enjoyed the CDs



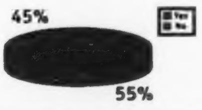
Students Watched Less TV



At Times, Worked with Adults



Sometimes Preferred Over TV



The focus of this five-year evaluation is to provide information regarding how well the project has met its primary objectives: 1) to generate more learning time for students by increasing parent involvement in education, and 2) to ultimately improve student achievement. Researchers at the University of Delaware Education Research and Development Center have been measuring the project's progress towards these objectives using a variety of evaluative methods, including home usage logs, classroom usage logs, staff surveys, parent interviews, student surveys, and student achievement testing.

The evaluation results highlighted here are based on fifteen public elementary schools and one parochial elementary school participating in the project in the Fall of 1997.

Increasing Learning Time through Parent Involvement. Many parents whose children participate in the project reported that the amount of time their child spends watching TV has decreased since involvement with the project. Further, about one-third of parents indicated that the amount of time their child spends doing schoolwork has increased since involvement with the project, as has the amount of time their child spends participating in family activities. The students confirmed the parent findings, as almost half of the students said they like the programs so much that they would rather use the

> *"Students who worked with a parent on the homework were more likely to choose educational software over television"*

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Meeting the Challenge!"

software than watch TV. In fact, students who use the software programs at home with a grown-up said they liked the programs even more than students who worked individually at home. When students use the instructional software at home, they usually use it between 30 and 60 minutes. Finally, school staff were also pleased with the parent involvement spurred on by the project.

Improving Student Achievement. Reading and mathematics achievement tests were administered to students in the first and second grades. First-graders were given the Stanford Early School Achievement Test (SESAT) in the fall and the Stanford9 (SAT9) open-ended format in the spring. Second-graders were given the Stanford9 open-ended format in both the fall and spring. As would be expected in any given academic year, first and second graders increased their math and reading test scores significantly over the course of the year. Student achievement scores were further analyzed in relation to a national reference population. Second grade results were very promising. Second grade students significantly increased both their reading and mathematics achievement scores in relation to the reference population. In fact on average, second grade students outperformed 15% more of the students in the reference group in the spring than they did in the fall on the reading assessment. On the math assessment, second grade students increased their standing in relation to the reference group an average of 14 percentile points.

For more information about the Delaware Challenge Grant evaluation, contact Dr. Sue Giancola at the Delaware Education Research and Development Center (302/831-4437 or giancola@udel.edu).

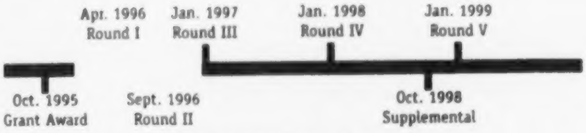
Susan Poland Giancola, Ph.D.

Senior Associate for Evaluation

Susan Poland Giancola currently serves as the Senior Associate for Evaluation in the Delaware Education Research and Development Center at the University of Delaware. At the R&D Center, she conducts program evaluations in a variety of educational settings as well as conducts policy analyses to inform education reform in Delaware. In addition to being the lead evaluator of Delaware's Challenge Grant project, she is the lead evaluator on a program that focuses on the transition needs of special education students, a program to improve the critical thinking skills of middle school students, and a program targeted at science-related professional development activities for teachers. Other recent projects have looked at the effects of school choice in an urban school district, the grade configuration of schools in a rural school district, satisfaction with services for visually impaired individuals, discipline-related research and practices in K-12 education, and the linkage between accountability and professional development.

Prior to her work with the Center, Sue worked with quality teams at the Wharton School of the University of Pennsylvania on process assessment, data collection methods, critical analysis, and process design/redesign and with Pharmaceutical Information Services at ZENECA, Inc. doing systems analysis, design, development, and ongoing support of pharmaceutical systems in sales and marketing, manufacturing, and research and development.

Sue has been awarded degrees from the University of Pennsylvania (Ph.D. in Policy Research, Evaluation, and Measurement, 1998), Pennsylvania State University (M.S. in Business Administration, 1995), and University of Virginia (B.S. in Systems Engineering, 1990). Her dissertation on the influences of adolescent misbehavior and substance abuse was awarded distinction in 1998 by the University of Pennsylvania.



Grant Timeline

2nd Annual Challenge Grant Conference: A Great Chance to Learn, Network and Meet the Challenge!

You might expect to find Delawareans flocking to the beach in the summer, but in November, Challenge Grant teachers flocked to the beach regardless of the temperature. Seventy-five educators from around the state met in Rehoboth for the second annual Challenge Grant Conference. The conference, held November 7th and 8th, was a huge success.

See "Evaluation Report: We're Meeting the Challeng" p. 8.

Teachers spent two days on a variety of activities. Dr. Sue Giancola provided the "keynote" as she shared the evaluation results with the attendees. After teachers saw the progress they were making, they proceeded to expand their horizons. Lightspan provided advanced training on the Local Connect product and teachers from the Challenge Grant and participating schools provided staff development sessions on Local Connect, adding graphics to web pages, and using digital cameras.

Teachers were also introduced to "Challenge Chat." The "Challenge Chat" allows teachers, or students, invovled in the grant to meet "virtually" in a secure chat room to share ideas, questions, and knowledge. Jennifer Minchini, the librarian at Richey Elementary School, commented, "This is a great way to continue the dialog that has started here at the conference."

Teachers also worked to correlate the Lightspan software to the state standards. Denise Speicher and Sally Caldwell, Curriculum Specialists with DOE led productive sessions on the state standards. After revisiting the state standards, teachers worked through software and made the connection between software and standards.

At Thursday evening's banquet, teachers had the opportunity to hear from Dr. Wayne Hartschuh, executive director of the Delaware Center for Educational Technology. Dr. Hartschuh spoke on the state's technology plans - both recent accomplishments and future plans.

Finally, just before midnight, the "brave" teachers took part in a "Silly Search at the Seashore." After the day's hard work teachers met informally to take part in a scavenger hunt that had teachers singing the "Mars Moose" theme song and searching for clues in the software manuals.

John Kacsmar and his son, Shaun, pose for a picture after leaving East Dover Elementary School. The day parents pick up Playstations can bring up to 100% of the parents to the school. "I saw about 10 parents at "Back to School Night, 15 parents for the school play and 27 out of 28 parents for the Playstation Distribution Night. This is the only day I get to see some parents," commented Deb Adam when she first took part in the project.

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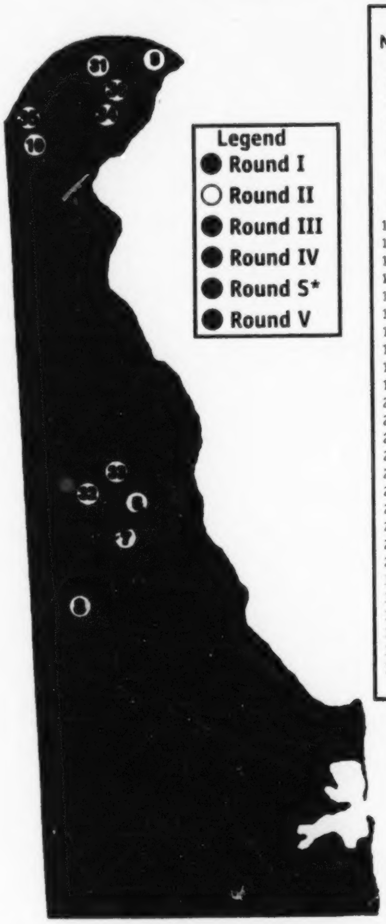
WHERE IN THE STATE OF DELAWARE ARE WE?



Challenge Grant Schools

No.	School Name	District
1	East Dover	Capital
2	Towne Pt.	Capital
3	Richey	Red Clay
4	Wilmington Manor	Colonial
5	P.L. Dunbar	Laurel
6	Fairview	Capital
7	South Dover	Capital
8	Lake Forest South	Lake Forest
9	Maple Lane	Brandywine
10	Brookside	Christina
11	Woodbridge	Woodbridge
12	H.O.Brittingham	Cape Henlopen
13	B. T. Washington	Capital
14	W.B.Simpson	Caesar Rodney
15	Christ Our King	Diocese of Wilm.
16	Seaford	Seaford
17	Hartly	Capital
18	Silver Lake	Appoquinimink
19	Frankford	Indian River
20	LuLu Ross	Milford
21	Smyrna	Smyrna
22	Banneker	Milford
23	Redding Middle	Appoquinimink
24	Townsend	Appoquinimink
25	Pulaski	Christina
26	Burnett	Brandywine
27	St. Peter's	Diocese of Wilm.
28	Clayton	Smyrna
29	North Smyrna	Smyrna
30	Rehoboth	Cape Henlopen
31	St. Anthony's	Diocese of Wilm.
32	William Henry Middle	Capital
33	North Dover	Capital
34	Lewis	Red Clay
36	Darley Road	Brandywine

Bridging Homes and Schools
in

- ✓ an area of over 1,900 sq. miles,
- ✓ 3 counties,
- ✓ 15 districts
- ✓ a Diocese and
- ✓ 34% of Del. elementary schools

** Round S designates the supplemental schools brought on via funds made available by the United States Department of Education in Fall of 1998.*

Success of Project Prompts Expansion

This fall, the United States Department of Education made available supplemental monies to existing Challenge Grants. The funds were an opportunity for the department to allow successful grants to expand. The Capital School District Challenge Grant received one of the largest supplements.

At a press conference in December, Project Director, Dr. Bill McGlumphy stated that he was glad to, "see additional funding being awarded based on a competitive application process. This process allowed us to make some improvements to our model and involve even more students from around the state." To take part in additional funding, schools were required to make a more significant match. A list of the districts making the additional committment follows.

The "bridge" is already being built in these schools. At the first "crossing of the bridge," Pat Grant, the coordinator for North Smyrna Elementary School said, "its great to see so many parents coming out to take part in the project."

The districts that are taking part in the supplemental funding are as follows:

Appoquinimink District
•
Brandywine District (Title I)
•
Cape Henlopen District
•
Christina District (Title I)
•
Diocese of Wilmington
•
Milford District
•
Smyrna District

"... A Fun Way to Teach the DE State Content Standards"

Sheila Baumgardner, Associate Director of Curriculum & Instruction, Woodbridge School District

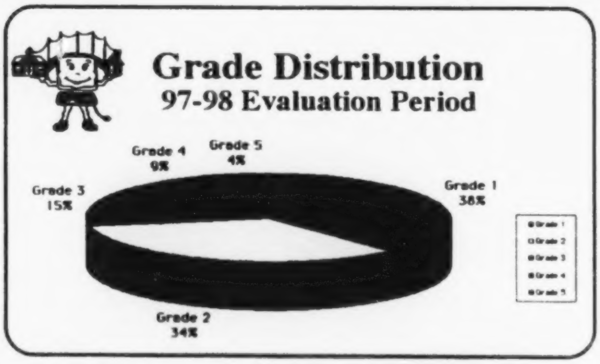
The Woodbridge School District is delighted to enjoy the advantages of the Challenge Grant. Whether being used to reinforce students' skills or to strengthen parent partnerships, our district believes in its success!

Under the leadership of Mrs. Tracie Hitchens, Grade 3 Teacher and Challenge Grant Site Coordinator, the Woodbridge Elementary third graders are reaping the benefits! A great third grade team of teachers work closely to insure that all seven classes utilize the Lightspan program provided through the Challenge Grant during school hours. The teachers only wish they had more time in the day to use it. They find the program very motivating for students. Often times they introduce a new skill or concept with a game on the Playstation™ - perhaps a game about multiplication or a game related to an English Language Arts skill. They also believe this approach helps to level the playing field for special education students who do as well on these activities as the regular education students.

The first year we implemented this program only 13 families participated. The second year yielded 58% of the families participating. This year we are pleased to announce that 84% of the families are involved. Parents say their children spend more time on the Playstation™ activities and less time watching TV. The children really enjoy the games too! The teachers are happy to have such a positive way to get the parents involved with the school.

The Challenge Grant and the Lightspan software provides a fun way to teach the State Content Standards. Mrs. Hitchens has completed a match of all the standards with the games in the math strand of programming. As we all strive to raise student achievement in the State of Delaware, Lightspan provides us with one more avenue to success. It is our hope at Woodbridge to expand our program to other grade levels next year.

The Capital School District / State of Delaware Instructional Television Consortium is a federally funded project. The project, funded under the Technology Innovation Challenge Grant program, was awarded in October of 1995.



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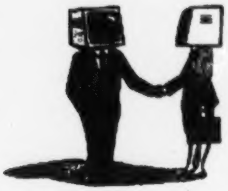


Personnel & Not Confidential: Who makes this happen!

WILLIAM P. McGLUMPHY, Ed.D.
Project Director
Dr. McGlumphy has sixteen years of highly successful classroom experience at the middle/high school level. Bill has spent the last twelve years as a secondary and district level administrator. Bill currently serves as an Adminstrative Assistant to the superintendent in the Capital School District. In addition to serving as Project Director, he has developed and managed additional grant funding programs in the district, and presented at national and state technology conferences.

Dr. McGlumphy received his Doctorate from the University of Delaware in Educational Administration. He holds an undergraduate degree from California State University (PA.) and a Master's Degree from Salisbury State University.

TED AMMANN, MCSE
Challenge Grant Specialist
Ted Ammann began his career as an elementary teacher in the Capital School District and was selected as the Capital School District's Teacher of the Year in 1996. Based on Ted's high energy level and keen interest in instructional technology, he left the classroom to serve as a Technology Systems Teacher. Since then, Ted has accepted the position as the Technology Challenge Grant Specialist and his current responsibilities include the overall management of the project with key focuses on planning, staff development, hardware and software deployment and evaluation.

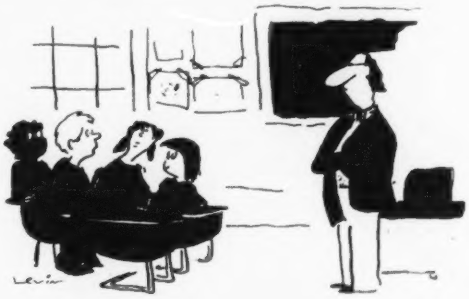
Ted received his undergraduate degree at the University of Delaware and is currently completing his MBA at the University of Delaware with a concentration in Management Information Systems. Ted is a Microsoft Certified Systems Engineer and was named a "Distinguished Educator" by Apple Computer in 1998.

TAMMY ADKINS, M.Ed.
Technology Teacher Trainer
Tammy Adkins began her career as a special education teacher. After a variety of experiences in special education, she began working as a second grade teacher at Booker T. Washington Elementary School. Tammy was a pioneer in the use of technology in the classroom. Most recently, Tammy has been hired as a teacher-trainer for the grant. In this capacity, Tammy helps schools to integrate technology in the classroom.

Tammy received her undergraduate degree from Indiana University of Pennsylvania and a graduate degree from Delaware State University. She also holds an administrative certificate.

LISA ALFARO, M.Ed.
Technology Teacher Trainer
Lisa Alfaro has eleven years of highly motivating classroom experience at the elementary level. She has spent Eight of those eleven years teaching children in the Capital School District where she utilized many facets of technology in her daily lessons. Her dynamic teaching abilities were recognized when her peers selected her as Teacher of the Year. Currently, Lisa is serving as a Teacher-trainer for the grant.

Lisa received her undergraduate degree from Salisbury State University and her Master's Degree in Curriculum and Instruction from Delaware State University. She is currently pursuing a doctorate degree in Educational Technology from the University of Delaware.



"A computer virus ate my homework."

Consortium Partners

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Middletown, DE 19709-1498

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Claymont, DE 19703-2479

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East Dover Elementary School
Dover, DE 19901-4797

South Dover Elementary School
Dover, DE 19901-4177

Booker T. Washington Elementary School
Dover, DE 19904-3497

Fairview Elementary School
Dover, DE 19904-2792

Hartly Elementary School
Hartly, DE 19953-0025

Towne Point Elementary School
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Brookside Elementary School
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Frankford Elementary School
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Milford, DE 19963-2699

Richey Elementary School
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Seaford Central Elementary School
Seaford, DE 19973-1434

Smyrna Elementary School
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Woodbridge Elementary School
Greenwood, DE - 19950-0508

Christ Our King School
Wilmington, DE 19802-3098

Townsend Elementary School
Townsend, DE 19734-0369

Marguerite H. Burnett Elementary School
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Casimir Pulaski Elementary School
Wilmington, DE 19805-4396

North Smyrna Elementary School
Smyrna, DE 19977-1092

Clayton Elementary School
Clayton, DE 19938-3400

St. Peter's Cathedral School
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Redding Intermediate School
Middletown, DE 19709-1140

Rehoboth Elementary School
Rehoboth Beach, DE 19971-1899

Benjamin Banneker Elementary School
Milford, DE 19963-1199

Darley Road Elementary School
Claymont, DE 19703-2209

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Wilmington, DE 19806-2298

North Dover Elementary School
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William Henry Middle School
Dover, DE 19904-2716

St. Anthony of Padua Grade School
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APPENDIX I -- WRITTEN STATEMENT OF MR. RODNEY RIVERA, FORMER STUDENT, GLASGOW HIGH SCHOOL, STUDENT, UNIVERSITY OF DELAWARE, BEAR, DELAWARE

Testimony Given by Rodney Rivera

April 12,1999

The use of technology in the classroom enhanced my education and created opportunities that have lead me to be a successful student both in my high school career and in my college career.

As a freshman in high school, I used the technology in the school for learning the basics of computer programming. My teacher allowed me to progress at my own pace through the course. The freedom allowed me to excel though the material without having to wait for the rest of the class. Also, during my sophomore year I was offered the opportunity to create and maintain Glasgow High School's web page. The job gave me a chance to build and expand upon my knowledge of programming languages and techniques. Through this experience I was able to learn the necessary techniques for computer programming that I still use in my college computer science classes.

In my junior year, I was able to participate in the planning and installation of the technology into the classrooms. Each classroom in Glasgow High School received three computers that were to be used for Internet access, word processing and other educational software. Our library's card catalog was placed online, which enabled me to search for books both in Glasgow's library and in other libraries throughout the state.

By my senior year software was being purchased as a supplement for the school's textbooks. Unfortunately, the software arrived too late for the teachers to begin integrating it into their curriculum for the school year. As I returned this year to speak with my former teachers, they showed me their new software and how they had integrated it into their curriculum. My physics teacher purchased interactive software that enabled students to construct systems of inclined planes, pulleys, and weights. The software will animate how the systems of planes, pulleys and weights will perform based on known constants and allow the user to obtain any instantaneous value desired for the system. The chemistry teacher integrated his computers into his lab so the students could use the hardware and software purchased to achieve more accurate and precise measurements while performing experiments. I have witnessed the students using both of technologies to their advantage in the classroom.

Though technology is beginning to be integrated into the classroom, there are still some major issues that need to be addressed. There are still a large percentage of teachers not making an attempt integrate the technology into the classroom. Part of the problem results from the lack of funding for software needed to integrate the technology into the classroom. Another problem is the teacher not understanding how to use the technology, thus resulting in the lack of knowledge to integrate technology into his curriculum. The final problem with technology in the classroom is the lack of technical support. As a former student of Glasgow High School and part of the computer support team for the Christina School District I can see that there are many machines that need repair. The two and a half employees contracted/employed by the district cannot keep up with the number of repairs requested. The idleness of computers due to the lack of response time for the repair discourages teachers from trying to integrate technology into the classrooms. I believe added technical support will increase the percentage of teachers integrating technology into the classroom. These three things I believe will increase the technology usage in the classroom.

APPENDIX J -- WRITTEN STATEMENT OF MR. MARK SCHONBACH, STUDENT, THE CHARTER SCHOOL OF WILMINGTON, WILMINGTON, DELAWARE

Testimony before the House Committee on Education and the Workforce

Subcommittee On Early Childhood, Youth & Families

Presented by

Mark Schonbach

Good Morning. Mr. Chairman, Members of the Subcommittee, thank you for this opportunity to speak before you today. My name is Mark Schonbach and I am a junior at the Charter School of Wilmington, here in Delaware. Charter was founded in 1996 as a Math, Science, and Technology based charter school. I began attending the school as a freshman at that time. Over the past two and a half years, I have benefited tremendously from the use of technology in the classroom and the school. I have come here to describe some of these benefits and to make some recommendations for expanding access to technology in the classroom.

Starting from my very first tour of the school, I knew Charter was different from any other school I'd seen. There were computers everywhere, and TV's and laserdisks, and calculators.

Although all of this technology is not absolutely essential, it certainly does make learning easier, faster, and more fun.

Take for example in Calculus class. The teacher asks us to plot a graph. We all pull out our graphing calculators (which can be leased from the school at little cost) and obtain an accurate representation of the function. Now, we could do manually, on graph paper, but it takes away valuable instructional time, and it could possibly be inaccurate.

Another example is in Chemistry class. The teacher is talking about bonding shapes. Everyone can look at the pictures in the book for hours and still not understand what the shapes are and what they mean. However, she turns on the laserdisk and it shows all of the different shapes, animated to demonstrate their dimensions. One could never get that from a textbook.

My third, and possibly most noteworthy example comes from the computer lab. As Assistant Web Master of our school's web page club, I am able to use our neoteric computers to add to and update our school's site. Students, parents, faculty, and community members all visit the site to keep up on school news, information about courses and activities, and even post messages to each other. Often, as the web master and I are updating the site after school, we have the opportunity to assist students using the computers to research topics for their schoolwork.

I have several recommendations as to how we can improve access to technology in our schools. First, I'd like to see very student have his or her own computer, preferably a laptop. Second, I'd like to see all textbooks come on CD-ROM or DVD. You can fit an entire textbook, plus all the pictures, activities, examples, and a lot more, such as audio, video, and animation onto a single CD. Lastly, I'd like to recommend the use of open-source software, such as the operating system Linux. Linux, which is based on UNIX, is an alternative to Windows that will run on machines with Intel processors. It has many software applications, it's powerful, very secure, has many knowledgeable people to offer support, and it's free. Yes, it's free. Not only is it free, most applications for it are free, requiring only a simple download. I ask you to seriously consider my recommendations, as I feel that they will benefit many future students all across the country.

I also want to thank you for allowing me to speak to you today. I hope my experiences and recommendation will be beneficial to you in your work. I'd be happy to answer any questions you might have.

APPENDIX K – WRITTEN STATEMENT OF DR. WESNER STACK, SUPERVISOR OF EDUCATIONAL TECHNOLOGY, MILFORD SCHOOL DISTRICT, MILFORD, DELAWARE

Testimony to House Subcommittee on Early Childhood, Youth, and Families

Educational Technology

April 12, 1999

Dr. Wesner Stack, Milford School District Supervisor of Educational Technology

Teachers and educators, looking at technology, are first inclined to ask "How do I teach it?" rather than "How can I use it to teach?". The first approach adds another area to the curriculum, which many educators feel it's too full as it is. The second approach is clearly a 'tools' approach that holds the promise of improvements in teaching and learning. However promising, teachers and students must have access to technological tools in order to gain the benefits of their use, which must be focused on student attainment of academic standards. In order for this to happen certain critical elements must be in place. First there must be an infrastructure established to support technology applications. This in turn requires the allocation of resources to acquire this infrastructure made by leaders with a vision of progress. Fortunately, in Delaware the Governor and the state legislature provided the first stage of leadership in the development of this infrastructure. Their decision to establish the Delaware Center for Educational Technology, which became the vehicle for the development of the state-wide educational network and connectivity of the school districts with the Internet and electronic communications. It remained for school districts to initiate the next stages of implementation, including continuation of the development of the infrastructure down to the desktop level and providing staff development opportunities in the use of new technology tools. This task, or series of tasks, has often been likened to creating a vehicle while trying to drive down the road.

The Milford School District approached this challenge with a variety of strategies designed to incorporate the benefits of technology and meet the educational needs of the community. A district-wide area network and school-based local area networks were built to capitalize on the infrastructure elements provided by DCET. To assist in the effort the Milford School Board and school superintendent, Dr. Robert Smith, proposed and successfully passed a referendum securing the commitment and support of the Milford community for technology programs in the schools. The Board also created and filled the position of Supervisor of Educational Technology to address staff training needs through a systematic program of courses and workshops. The focus of the staff development program was initially to provide training in productivity skills for teachers and subsequently to application of technologically based instruction in the classroom. The district in partnership with the University of Delaware began the development of a standards based, teacher competency assessment program. Teachers may elect to proceed through various technology levels through performance based assessments built on real-world tasks. The district provides a stipend for increased levels of competence. In addition, the superintendent made a commitment to place a state of the art, multimedia desktop as each teacher and administrator's workstation. This was accomplished in September, 1998. Funding sources have been allocated to provide a systematic replacement policy for hardware and software to maintain the forward direction of the district's technology initiatives. The capability provided by this effort produced dramatic increases in teacher use of technology for classroom management and instructional purposes. All staff at this point could participate in technology training and immediately practice and apply skills learned. On line attendance and grading programs were piloted and implemented. The use of objective specific software such as that used for library access, career development, technology career pathways and writing instruction has been greatly expanded in individual classrooms and lab settings.

The district has leveraged its financing for technology with funding from grants such as the Technology Literacy grant, Bell Atlantic, the Northeast Regional Technology Consortium and participation in the Lightspan program. These programs have allowed the district to target specific technology goals and applications such as the instructional management system, using the Internet for research, development of multimedia instruction and linking the classroom with parents through technology.

As hardware availability and staff development have proceeded, the district continues these initiatives. Staff development has advanced from productivity/skill levels to application specific instruction and resource development. At the same time, expanded student use of technology has become the focus of the next phase of district technology planning.

In short, the strategies employed by the Milford School District to insure integration of technology in the schools and classrooms have been:

1. Development of the infrastructure to include on-demand teacher access
2. Provision of a staff development program which includes assessment of teacher competencies relating to standards for the application of technology in instruction.
3. Provision of student access to technology through classroom and lab technology-rich environments.
4. Acquisition of the resources needed to accomplish the above and maintain momentum for ongoing programs.
5. Adopt a long-term perspective of technology implementation and a systematic solution with progressive milestones toward full goal accomplishment.

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